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| 1a REPORT SECURITY CLASSIFICATION | | | 16 RESTRICTIVE MARKINGS | | | | | |
| Unclassified | | | | | | | | |
| 2a SECURITY | CLASSIFICATIO | N AUTHORITY | | | /AVAILABILITY OF | | distribution | |
| 26 DECLASSIF | FICATION / DOV | VNGRADING SCHED | ULE | unlimited. | | · | | |
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| 11. TITLE (Inci | lude Security C | Classification) | | <u> </u> | | | | |
| Cost Dri | ver Analys | sis for Tray | Pack Foods | | | | | |
| 12. PERSONAL | L AUTHOR(S) | | | | | | | |
| | egor Smith | | | | | | | |
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| Final | | | n 85 to Jun 87 | 1988 Marc | ch | | 01 | |
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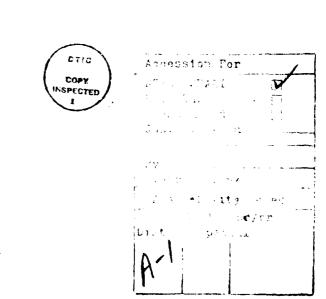
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PREFACE

Tray Pack foods are one of the primary ration sources for the new Army Combat Field Feeding System. Cost and Quality Control are necessary for all facets of the Tray Pack manufacturing process: from the distribution and warehousing of raw materials, preparation and assembly of menu items, closing and sterilization of the product containers, to the eventual packaging and shipping of the completed assemblies. The purpose of this study is to identify and quantify the major cost factors of the manufacturing process of Tray Pack foods.

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The University of Massachusetts Department of Industrial Engineering and Operations Research was charged to conduct the study. The work was performed under Project #1L162724AH99, Joint Services Food/Nutrition Technology Task Area B5 - Subsistence Technology, Technical Effort - Food Processing and Preservation Techniques, Producibility of Thermostabilized Combat Rations. The Project Officers were Joseph W. Szczeblowski and Robert G. Bernazzani.



ACKNOWLEDGEMENTS

I wish to thank Joe Szczeblowski and Bob Bernazzani and the other staff members of Natick Research, Development & Engineering Center (Natick) for their support, comments, directions and criticism throughout this project. I also wish to thank all the manufacturers who have donated their valuable time, information and comments as the Cost Driver Analysis developed.

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Chapter 1. INTRODUCTION

A. Purpose

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The overall purpose of this report is to identify and quantify those key cost factors (cost drivers) within the manufacturing process of Tray Packs so that the current problem areas can be pinpointed and new innovations, along with new technologies, processes, and equipment can be developed to aid in reducing Tray Pack manufacturing costs. These cost factors are identified and their quantitative impact on manufacturing are assessed.

The Tray Pack manufacturing process is viewed as a series of interrelated component processes and sub-processes concerned with the manufacturing of the different Tray Pack menu items. The report is organized by the component and subcomponent manufacturing processes as well as by the type of the Tray Pack menu item. This report focuses on what existing factors affect the manufacturing operations, i.e., what are the key cost component areas that currently exist.

A questionnaire (see Appendix) was designed and was sent to all manufacturers of Tray Packs in the summer of 1986. Within the questionnaire schedule, there were certain questions which alluded to alternative ways of reducing manufacturing costs, but the bulk of the questionnaire focused on documenting and measuring existing cost factors in Tray Pack manufacturing.

B. Assumptions

Some of the key assumptions which guided the study were the following:

- i) Performance specifications for the Tray Pack menu items were assumed to be as manufacturers presently understood them.
- ii) Tray Pack volume will likely increase above current fiscal year levels, but the respondents were asked to reply based upon their current manufacturing technologies, i.e., plant, equipment, and operations, not what future changes they were contemplating.
- iii) In the questionnaire, the Tray Pack menu items were categorized in a way which would allow for ease in characterizing and identifying the key cost concerns. Therefore, the Tray Pack menu items are segmented into four food categories based on their manufacturability requirements. These four food groups are as follows:
 - Group A. One Step Filling (16 food items)
 - Group B. Two Step Filling (39 food items)
 - Group C. Hand Placement (3 food items)
 - Group D. Oven Bake (6 food items)

These basic food groups were derived from information available within NATICK with regards to the manufacturability of the Tray Pack menu items. Obviously, the division of the menu items into the food groups may not be the only breakdown, however it provides a useful stepping stone and serves as a guide in the questionnaire for determining the key cost factors in the manufacturing process.

Below are three tables of menu items subdivided into manufacturing types as defined by NATICK:

Table 1: One-Step Menu Items (Group A)

| Entrees | Entrees | Starches/Vegts | Desserts |
|----------------------|-------------------------|-----------------------|--------------------|
| ☐ BBQ Beef | Chicken w/ Noodles | ☐ Potato Salad | ☐ Apple Dessert |
| ☐ Beef Stew | ☐ Chili Con Carne | ☐ Sweet Creamed Corn | Apple Sauce |
| ☐ Breakfast Bake | Creamed Gr. Beef | | ☐ Blueberry Desser |
| Chicken a la King | ☐ Eggs w/Ham | | ☐ Chocolate Puddin |
| ☐ Chicken Stew/Gravy | | | ☐ Cherry Dessert |
| Tal | ble 2: Two Step Me | nu Items (Group 1 | В) |
| Entrees | Entrees | Starches | Vegts/Desserts |
| □ BBQ Pork | ☐ Meatloaf w/Gravy | ☐ Beans w/Pork | ☐ Glazed Carrots |
| ☐ Beef and Macaroni | Pork Sausage Links | ☐ Buttered Noodles | Green Beans |
| Beef Pepper Steak | Pork Slices w/Gravy | ☐ Buttered Potatoes | ☐ Mixed Vegetables |
| ☐ Beef Tips w/Gravy | Roast Beef w/Gravy | ☐ Escalloped Potatoes | Peas and Carrots |
| ☐ Beef Pot Roast | ☐ Roast Chicken | ☐ Macaroni Cheese | ☐ Peas/Mushrooms |
| Canadian Bacon | ☐ Spaghetti w/Meatballs | ☐ Macaroni Salad | ☐ Sliced Carrots |
| Chicken Breasts | Swedish Meatballs | Spanish Rice | ☐ Whole Kernel Cor |
| Chicken Cacciatore | Swiss Steak | Sweet Potatoes | Fruit Cocktail |
| Franks in Brine | ☐ Turkey Sl.w/Gravy | ☐ White Rice | Sliced Peaches |
| ☐ Ham Slices | | | ☐ Sliced Pears |
| | | | ☐ Pineapple/Syrup |
| Table 3: Hand-F | Placement & Oven I | Bake Menu Items((| Groups C & D) |
| Hand Placement It | | ven Bake Items | aroups o w D) |
| ☐ Lasagne | ☐ Apple Coffee | · Cake | ke |
| Stuffed Cabbage | ☐ Blueberry C | ake D Pound Cal | ke |

☐ Chocolate Cake

☐ Spice Cake

☐ Stuffed Peppers

For every manufacturer, all Tray Pack items they produced were to be identified so as to insure that the range of manufacturing problems associated with the different menu items could be identified. The results of the problems encountered with each of the menu items is discussed in the Chapters 2 and 3 of the report. In Table 4 below, the FY88 procurement for specific Tray Pack menu items is presented.

Table 4: FY88 Tray Pack Procurement

| Item | Quantity (Cans) | Percentage (%) FY88 Procurement |
|---------------------------------|-----------------|------------------------------------|
| BBQ Beef | 42,2 00 | 1.05 |
| Beef Stew | 82,000 | 2.04 |
| Chicken ala King | 83,000 | 2.06 |
| Creamed Ground Beef | 59,5 00 | 1.48 |
| Eggs w/Ham | 67,000 | 1.67 |
| Apple Dessert | 143,000 | 3.56 |
| ¹ Beef Pepper Steak | 18,300 | 0.45 |
| Canadian Bacon | - | _ |
| Chicken Breasts | 107,000 | 2.66 |
| Frankfurters in Brine | 68,000 | 1.69 |
| Swiss Steak | 71,500 | 1.78 |
| Turkey Slices w/Gravy | 60,000 | 1.49 |
| Escalloped Potatoes | _ | _ |
| Macaroni Cheese | 3 9,000 | 0.97 |
| Sweet Potatoes | 8,500 | 0.21 |
| Green Beans | 92,000 | 2.29 |
| Mixed Vegetables | 130,500 | 3.24 |
| Peas/Mushrooms | 86,000 | 2.14 |
| ² Beans w/Gravy | 32,500 | 0.81 |
| Meatloaf w/Gravy | - | _ |
| Pork Slices w/Gravy | _ | - |
| ³ Roast Beef w/Gravy | 83,000 | 2.06 |
| Roast Chicken | - - | - |
| Macaroni Salad | - | - |
| Peas and Carrots | - | - |

¹ Now Bean w/Bacon

SARA DIBINI KASAKA BINING SANDI DINING KAKAKA DINING KANAKA

² Now Bean Pot Roast

³ Now Beef Strips & Green Peppers

⁻ None procured for FY88

C. Background Information

In order to understand the logic and organization of the study, some definitions of the manufacturing process and its component processes are helpful at this point. We view the manufacturing process as being composed of three separate but interrelated processes:

- I. Purchasing: Concerned with the procurement of raw materials, tools, equipment and supplies necessary to the Tray Pack manufacturing process. Purchasing has two sub-component processes:
 - 1. Ordering: Process of acquistioning raw materials and necessary supplies for Tray Pack manufacturing.
 - 2. Receiving: Process of receiving raw materials from rail and truck deliveries, storing of these items, and retrieving these items from the warehouse.
- II: Production & Assembly: Concerned with the preparation, fabrication and assembly of food products for the Tray Pack menu items. Production & Assembly have the following four subcomponent processes:
 - 3. Preparation: Process of preparing the raw materials for the specific menu item.
 - 4. Filling: Process of filling the cans with the menu item, inspecting the can contents, weighing the contents, and transferring the cans to the Closing operation.
 - 5. Closing: Process of joining the cans, lids and contents of each can, transferring the can to the seamer, closing the can, washing the can, and collecting the cans into a unit load so they can be transferred to the Sterilization process.
 - 6. Sterilization: Process of loading the unit load of cans into the sterilizer(s), cooking the cans, unloading the cans from the sterilizer(s) and transferring them to the Packaging area.

III: Distribution: Concerned with the carton fabrication, boxing, labelling, palletizing, sheathing and general shipping of completed Tray Pack assemblies. There are two subcomponent processes associated with Distribution:

- 7. Packaging: Process of forming the cartons, providing pad inserts, boxing the trays, labelling the shipping cartons, palletizing the cartons, sheathing them and transferring them to the shipping warehouse.
- 8. Shipping: Process of identifying and storing the pallets of Tray Packs, storing for USDA incubation purposes, retrieving them, shipping them on rail or truck, and storing damaged and returned cans.

D. Project Methodology

The questionnaire was organized around questions that sought to identify key cost factors by interrelating the three Manufacturing Processes (I.,II., and III.), their eight subprocesses (1. through 8.) and comparing costs with the four food groups (A. through D. of Tables 1,2 and 3). See Figure 1.

Below is a decision or morphological tree which indicates the general structure or framework around which the cost factors were identified for each food group.

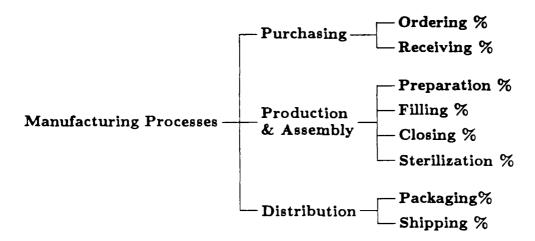


Figure 1: Process Decision Tree

In effect, the main goal of this study was to identify the key cost items of the decision tree so that future investment in plant, equipment and process modifications for the manufacturing of Tray Pack foods could be done in some optimal fashion. At the time of this study, there were seven Tray Pack manufacturers. The questionnaire was mailed out to each manufacturer. Four responded to the questionnaire and the report is written from their responses.

E. General Survey Results

There are some important findings that were revealed through the survey. While many of the cost factors were perhaps already known to most involved in Tray Pack manufacturing, this report has begun to quantify these cost factors in relation to the total manufacturing costs so that future investments in research and development may be better targeted to where improvements in cost savings can be best achieved.

As will be shown throughout the report, most cost improvements can be made within the Production/Assembly operations, namely Filling, Preparation, and Closing. Little improvements in automating these processes presently exist in Tray Pack manufacturing because much of the specialized equipment for Filling, Preparation, and Closing of Tray Pack operations does not either exist or is still in the developmental

stages. Also, demand for Tray Packs has been low, commercial markets are not strong, and little engineering expertise exists either within the manufacturer's operations or within the industry to implement the types of equipment and total line designs which would truly automate these processes. From the survey 73.5% of total manufacturing costs can be attributed to Production and Assembly operations, 21.0% for Distribution operations, while only 5.5% was allocated to Purchasing. Most manufacturers polled in the survey felt that the Packaging process within their plants could achieve the most immediate cost improvement because the activities (boxing the cans, labelling the cartons, palletizing the unit loads and sheathing the pallets) were repetitive and independent of the variety of menu items that tend to make automation difficult for the rest of the activities associated with Tray Packs.

Throughout Chapter 2 and the remainder of the report, we will examine the detailed concerns of each manufacturer for each of the eight subprocesses and identify not only what were the key problems and cost factors within each subprocess that occurred, but also what detailed improvements should be made. The results have been combined with regard to the food groups for ease in understanding.

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Chapter 2. PROCESS COST FACTORS

This Chapter will focus on the detailed problems, cost factors, and recommendations made by the manufacturers with regards to each of the detailed subprocesses of Tray Pack manufacturing. Within each section of this Chapter, we will summarize the problems and concerns of the manufacturers along with their percentage allocation of the key cost factors within each subprocess. The reader may wish to scan the questions of the questionnaire, see the Appendix, as each section is reviewed to see the type of question asked and how the summary responses correlate with the questions.

A. Ordering Process

Most people have had some problems with the ordering of can/lids from Central States mainly due to the fact that Central States is a single-source supplier, delivery times are slow, and the quality of lids/bottoms are below what they should be.

Printing of the lids is also a problem because of available suppliers, printing costs, lead times, quality of printing and delivery times.

Depending on the producer and his/her location, some have had problems with the general acquisition and supply of meats, dairy, vegetable, starch and dessert raw materials for the Tray Pack menu items. Below is a listing of the menu items mentioned by producers for which problems with ordering occurred along with the reasons for the problem, indicated by the "blackened" squares (Figure 2).

| IT | EMS | | REASONS for | Problem |
|----|---------------------|-----------------|-----------------------|------------|
| | BBQ Beef | Raw Material \$ | Material Quality \$ | Other \$ |
| | Beef Stew | Raw Material \$ | Material Quality \$ | Other \$ |
| | Chicken a la King | Raw Material \$ | Material Quality \$ | ☐ Other \$ |
| | Creamed Gr.Beef | Raw Material \$ | Material Quality \$ | Other \$ |
| | Eggs w/Ham | Raw Material \$ | ☐ Material Quality \$ | Other \$ |
| | Apple Dessert | Raw Material \$ | Material Quality \$ | Other \$ |
| | Beef Pepper Steak | Raw Material \$ | Material Quality \$ | Other \$ |
| | Canadian Bacon | Raw Material \$ | Material Quality \$ | Other \$ |
| | Chicken Breasts | Raw Material \$ | Material Quality \$ | Other \$ |
| | Franks in Brine | Raw Material \$ | Material Quality \$ | □ Other \$ |
| | Swiss Steak | Raw Material \$ | Material Quality \$ | Other \$ |
| | Turkey Sl.w/Gravy | Raw Material \$ | Material Quality \$ | ☐ Other \$ |
| | Escalloped Potatoes | Raw Material \$ | Material Quality \$ | Other \$ |
| | Macaroni Cheese | Raw Material \$ | Material Quality \$ | Other \$ |
| | Sweet Potatoes | Raw Material \$ | Material Quality \$ | Other \$ |
| | Green Beans | Raw Material \$ | Material Quality \$ | Other \$ |
| | Mixed Vegetables | Raw Material \$ | ☐ Material Quality \$ | □ Other \$ |
| | Peas/Mushrooms | Raw Material \$ | ☐ Material Quality \$ | Other \$ |

Figure 2: Ordering Process Menu Item Problems

In general the most significant cost factors center on the raw material costs. Table 5 gives a general percentage breakdown of the cost factors affecting the Ordering process with the cost of raw materials absorbing 2/3 of total Ordering costs, labor requiring 1/10 of the total costs and the other factors are basically insignificant and can be attributed to overhead expenditures.

| Table 5: Ordering | % | |
|-------------------|--------------------------------------|--------|
| Raw Material \$ | Direct (Food Items/Cans) | 66.00 |
| | Indirect (Wastage/Spoilage) | 2.00 |
| Labor \$ | Direct (Personnel) | 10.00 |
| | Indirect (Training/Overtime) | 3.00 |
| Equipment \$ | Direct (Capital Expenditures) | 2.00 |
| | Indirect (Operational/Repairs) | 5.00 |
| Space \$ | Direct (Cubic footage) | 3.00 |
| | Indirect (Flexibility/Accessibility) | |
| Energy \$ | Direct (Power/Water/Cooling) | 6.00 |
| | Indirect (Breakdowns/Weather). | 2.00 |
| Maintenance\$ | Direct (Personnel) | |
| | Indirect (Accidents/Vermin) | 1.00 |
| Administrative\$ | Direct (Personnel) | 3.00 |
| | Indirect (Copying/Computing) | 2.00 |
| Summary\$ | Grand Total | 100.00 |

B. Receiving Process

PRESENTED TOTAL CONTRACTOR CONTRACTOR STREETS OFFICE

For the Receiving process, which is concerned with the receipt of goods and their proper warehousing before being utilized in the preparation of the Tray Pack menu items, some of the menu items have created problems within the warehouse operations of the manufacturers. Figure 3 illustrates those menu items that have resulted in spoilage and significant warehousing costs.

| ITEMS | | REASONS | for Problem |
|-------------------------------------|---------------|----------------|----------------------------|
| □ BBQ Beef | D Spoilage \$ | ■ Warehouse \$ | Other \$ |
| □ Creamed Gr.Beef | Spoilage \$ | Warehouse \$ | Other \$ |
| □ Eggs w/Ham | Spoilage \$ | ■ Warehouse \$ | ☐ Other \$ |
| ☐ Apple Dessert | D Spoilage \$ | Warehouse \$ | Other \$ |
| Franks in Brine | Spoilage \$ | ☐ Warehouse \$ | Other \$: Fresh Time Frame |
| □ Beans w/Pork | Spoilage \$ | Warehouse \$ | Other \$ |
| ☐ Escalloped Potatoes | Spoilage \$ | ☐ Warehouse \$ | ☐ Other \$ |
| □ Sweet Potatoes | Spoilage \$ | ☐ Warehouse \$ | Other \$ |
| □ Green Beans | Spoilage \$ | Warehouse \$ | ☐ Other \$ |
| ☐ Mixed Vegetables | Spoilage \$ | Warehouse \$ | ☐ Other \$ |
| □ Peas/Mushrooms | ☐ Spoilage \$ | ■ Warehouse \$ | Other \$ |

Figure 3: Receiving Process Menu Item Problems

Table 6 illustrates the cost breakdown for the receiving costs, and as expected, raw material costs account for 3/4 of the cost of the receiving operations and the rest of the costs can be attributed to overhead.

| Table 6: Receiving | % | |
|--------------------|--------------------------------------|--------|
| Raw Material \$ | Direct (Food Items/Cans) | 75.00 |
| | Indirect (Wastage/Spoilage) | 2.00 |
| Labor \$ | Direct (Personnel) | 2.00 |
| | Indirect (Training/Overtime) | 1.00 |
| Equipment \$ | Direct (Capital Expenditures) | |
| | Indirect (Operational/Repairs) | |
| Space \$ | Direct (Cubic footage) | 4.00 |
| | Indirect (Flexibility/Accessibility) | 3.00 |
| Energy \$ | Direct (Power/Water/Cooling) | 4.00 |
| | Indirect (Breakdowns/Weather). | 2.00 |
| Maintenance\$ | Direct (Personnel) | |
| | Indirect (Accidents/Vermin) | 2.00 |
| Administrative\$ | Direct (Personnel) | 4.00 |
| | Indirect (Copying/Computing) | 1.00 |
| Summary\$ | Grand Total | 100.00 |

Given the emphasis on raw material costs, it is understandable that the manufacturers felt that reducing delivery delays and improving the refrigeration and storage systems would be the wisest means of improving the Receiving process. Figure 4 indicates the recommendations felt to be most important for improving the Receiving process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

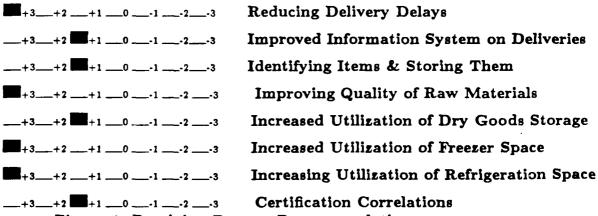


Figure 4: Receiving Process Recommendations

D. Filling Process

For the Filling process, which is concerned with filling the cans with the specified menu item, inspecting the can contents, weighing the contents and transferring the cans to the closing operation, again there are key labor and equipment problems created by the various menu items associated with the Filling process. Not surprisingly, the list of items identified as problematic during the Preparation process is again identified in Figure 7 as problematic during the Filling process.

| ITEMS | | REASONS | for Problem |
|-------------------------------------|-----------|---------------|-------------|
| □ BBQ Beef | ■ Labor\$ | Equipment\$ | Other\$ |
| □ Beef Stew | Labor\$ | ☐ Equipment\$ | Other\$ |
| ☐ Creamed Gr.Beef | Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Eggs w/Ham | Labor\$ | Equipment\$ | Other\$ |
| □ Apple Dessert | ■ Labor\$ | ☐ Equipment\$ | ☐ Other\$ |
| Franks in Brine | Labor\$ | ☐ Equipment\$ | Other\$ |
| \Box Meatloaf w/Gravy | Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Pork Slices w/Gravy | Labor\$ | ☐ Equipment\$ | Other\$ |
| ☐ Roast Beef w/Gravy | Labor\$ | ☐ Equipment\$ | ☐ Other\$ |
| □ Roast Chicken | Labor\$ | ☐ Equipment\$ | ☐ Other\$ |
| □ Swiss Steak | Labor\$ | Equipment\$ | Other\$ |
| □ Turkey Sl.w/Gravy | Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Macaroni Cheese | Labor\$ | Equipment\$ | Other\$ |
| ☐ Green Beans | Labor\$ | ☐ Equipment\$ | Other\$ |
| ☐ Mixed Vegetables | Labor\$ | ☐ Equipment\$ | ☐ Other\$ |
| □ Peas/Mushrooms | Labor\$ | ☐ Equipment\$ | Other\$ |

Figure 7: Filling Process Menu Item Problems

Also, as may be expected, raw materials loom as the key underlying reason for driving the costs during the Filling process since they control the number and complexity of the filling steps and labor and equipment requirements necessary in filling the Tray Packs.

Ways of automating all aspects of the Filling process dominate the recommendations for improvement. Figure 8 illustrates the strength and importance and types of automation all along the Filling line operation. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion. Later on when we aggregate our cost factors, the Filling operation will turn out to be the most costly of all the operations so it is understandable that any automation of the activities in this process would be beneficial.

| Table 8: Filling Costs Percentage Breakdown % | | | |
|---|--------------------------------------|--------|--|
| Raw Material \$ | Direct (Food Items/Cans) | 73.50 | |
| | Indirect (Wastage/Spoilage) | 1.00 | |
| Labor \$ | Direct (Personnel) | 10.00 | |
| | Indirect (Training/Overtime) | 1.00 | |
| Equipment \$ | Direct (Capital Expenditures) | 2.00 | |
| | Indirect (Operational/Repairs) | 1.00 | |
| Space \$ | Direct (Cubic footage) | 1.00 | |
| | Indirect (Flexibility/Accessibility) | 3.00 | |
| Energy \$ | Direct (Power/Water/Cooling) | 3.00 | |
| | Indirect (Breakdowns/Weather). | 1.00 | |
| Maintenance\$ | Direct (Personnel) | 1.00 | |
| | Indirect (Accidents/Vermin) | 1.00 | |
| Administrative\$ | Direct (Personnel) | 1.00 | |
| | Indirect (Copying/Computing) | 0.50 | |
| Summary\$ | Grand Total | 100.00 | |

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| +3+2+10123 | Automated Can and Lid Stacking |
|------------|---|
| +3+2+10123 | Automated Can Washing |
| +3+2+10123 | Automated Placement of Large Menu Items |
| +3+2+10123 | Automated Piston & Liquid Filling |
| +3+2+10123 | Automated Check-Weigh Reject Operations |
| +3+2+10123 | Automated Can Transfer between Stations |
| +3+2+10123 | Automated Material Handling |

Figure 8: Filling Process Recommendations

E. Closing Process

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As can be seen in Figure 9, certain menu items have closing problems. Besides the Lid/Can Merge and Closing Equipment itself, Integrity of the Seam for the listed menu items is a crucial problem.

REASONS for Problem

| BBQ Beef | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
|---------------------|-----------------|--------------------|-------------------------|
| Eggs w/Ham | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Apple Dessert | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Franks in Brine | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Pork Slices w/Gravy | Lid/Can Merge\$ | ☐ Closing Equipt\$ | Other\$: Seam Integrity |
| Turkey Sl.w/Gravy | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Beans w/Pork | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Macaroni Cheese | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Green Beans | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Mixed Vegetables | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |
| Peas/Mushrooms | Lid/Can Merge\$ | Closing Equipt\$ | Other\$: Seam Integrity |

Figure 9: Closing Process Menu Item Problems

As is demonstrated in Table 9, 40% of the closing costs are due to equipment problems while 30% are due to labor problems. It is probably due to the frequent breakdowns and closing equipment reliability that the labor costs are so significant.

| Table 9: Closing | Costs Percentage Breakdown | % |
|------------------|--------------------------------------|---------------|
| Labor \$ | Direct (Personnel) | 33.50 |
| | Indirect (Training/Overtime) | 5.00 |
| Equipment \$ | Direct (Capital Expenditures) | 10.00 |
| | Indirect (Operational/Repairs) | 3 0.00 |
| Space \$ | Direct (Cubic footage) | 2.00 |
| - | Indirect (Flexibility/Accessibility) | 3.00 |
| Energy \$ | Direct (Power/Water/Cooling) | 5.00 |
| | Indirect (Breakdowns/Weather). | 3.00 |
| Maintenance\$ | Direct (Personnel) | 5.00 |
| | Indirect (Accidents/Vermin) | 1.00 |
| dministrative\$ | Direct (Personnel) | 2.00 |
| | Indirect (Copying/Computing) | 0.50 |
| Summary\$ | Grand Total | 100.00 |
| | | |

As can be seen in the recommendations made by the manufacturers, material movement of the can between closing and seaming and a faster/more reliable seamer would be most cost effective during the Closing process. Other automatic procedures also are recommended in Figure 10. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

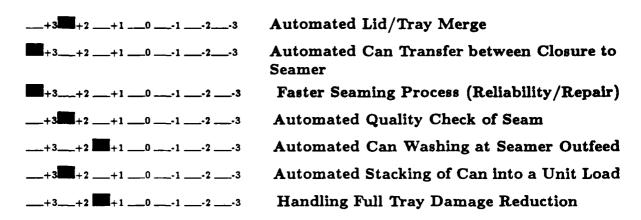


Figure 10: Closing Process Recommendations

F. Sterilization Process

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Besides controlling the Sterilization process and material handling problems between the seamer and sterilizers and eventual Packaging process, Galvanic Corrosion (chemical reactions between the can and the can contents), Process Times, and High Acid problems on the Apple Dessert item were identified as key problems during the Sterilization process. Figure 11 presents this data.

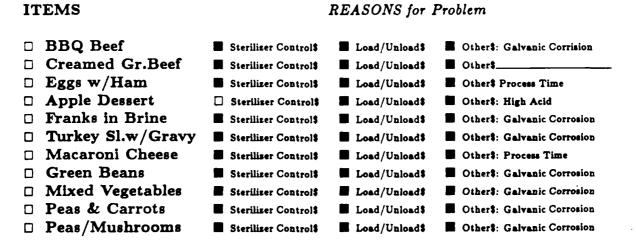


Figure 11: Sterilization Process Menu Item Problems

The Direct Costs of the Sterilization equipment as well as their Operational and Energy costs largely control costs of the Sterilization process.

| Table 10: Sterilization | Costs Percentage Breakdown | % |
|-------------------------|--------------------------------------|--------|
| Labor \$ | Direct (Personnel) | 12.00 |
| | Indirect (Training/Overtime) | 2.00 |
| Equipment \$ | Direct (Capital Expenditures) | 30.00 |
| | Indirect (Operational/Repairs) | 10.00 |
| Space \$ | Direct (Cubic footage) | 5.00 |
| | Indirect (Flexibility/Accessibility) | 5.00 |
| Energy \$ | Direct (Power/Water/Cooling) | 20.00 |
| | Indirect (Breakdowns/Weather). | 5.00 |
| Maintenance\$ | Direct (Personnel) | 4.00 |
| | Indirect (Accidents/Vermin) | 4.00 |
| Administrative\$ | Direct (Personnel) | 2.00 |
| | Indirect (Copying/Computing) | 1.00 |
| Summary\$ | Grand Total | 100.00 |

Material Handling dominates as the key process improvement of the Sterilization process. For the three recommendations for improvement in the Sterilization process which were recommended by the manufacturers (Figure 12), a +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.



Figure 12: Sterilization Process Recommendations

G. Packaging Process

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Since the Packaging process is not really affected by the menu item, no list of problems was requested of the manufacturers. What was found as a result of the cost drivers identified in Table 11, however, was the labor intensity of this process and its impact on costs of the Packaging process. As shown, 70% of the costs of the Packaging process are due to labor.

| Table 11: Packaging Costs Percentage Breakdown | | |
|--|--------------------------------------|--------|
| Raw Material \$ | Direct (Packaging/Boxing Items) | 20.00 |
| | Indirect (Wastage/Spoilage) | 2.00 |
| Labor \$ | Direct (Personnel) | 70.00 |
| | Indirect (Training/Overtime) | 3.00 |
| Equipment \$ | Direct (Capital Expenditures) | |
| | Indirect (Operational/Repairs) | |
| Space \$ | Direct (Cubic footage) | |
| | Indirect (Flexibility/Accessibility) | 2.00 |
| Energy \$ | Direct (Power/Water/Cooling) | |
| | Indirect (Breakdowns/Weather). | |
| Maintenance\$ | Direct (Personnel) | 2.00 |
| | Indirect (Accidents/Vermin) | |
| Administrative\$ | Direct (Personnel) | 1.00 |
| | Indirect (Copying/Computing) | |
| Summary\$ | Grand Total | 100.00 |

Automation could play a key role to reducing costs of the Packaging process as Figure 13 demonstrates. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

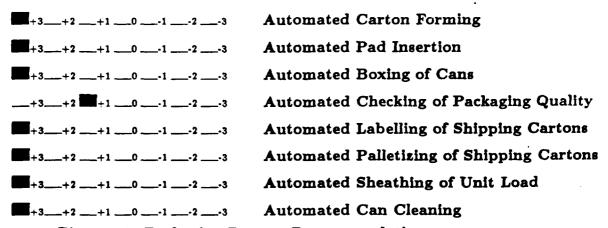


Figure 13: Packaging Process Recommendations

H. Shipping Process

Finally, as is seen in the cost driver breakdown for the Shipping process, Table 12, Administrative problems loom as the key driver of Shipping costs.

| Table 12: Shipping Costs Percentage Breakdown % | | |
|---|--------------------------------------|--------|
| Labor \$ | Direct (Personnel) | 15.00 |
| | Indirect (Training/Overtime) | 2.00 |
| Equipment \$ | Direct (Capital Expenditures) | 3.00 |
| | Indirect (Operational/Repairs) | 1.00 |
| Space \$ | Direct (Cubic footage) | 20.00 |
| | Indirect (Flexibility/Accessibility) | 10.00 |
| Energy \$ | Direct (Power/Water/Cooling) | |
| | Indirect (Breakdowns/Weather). | |
| Maintenance\$ | Direct (Personnel) | |
| | Indirect (Accidents/Vermin) | |
| Administrative\$ | Direct (Personnel) | 45.00 |
| | Indirect (Copying/Computing) | 4.00 |
| Summary\$ | Grand Total | 100.00 |

Figure 14 represents the manufacturer's recommendations for controlling costs in the Shipping process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion. These recommendations center an automated information system for improving cost control in Shipping.

| +3+2+10123 | Automated Shipping Warehouse Storage |
|------------|--|
| +3+2+10123 | Automated Order Picking of Stored Cans |
| +3+2+10123 | Automated Material Handling/Transfer |
| +3+2+10123 | Computerized Product Accountability |

Figure 14: Shipping Process Recommendations

Chapter 3. GENERAL MANUFACTURING PROCESS COST FACTORS

A. General Manufacturing Problems

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This last Chapter summarizes all the problems found with the subprocesses and examines which subprocesses are the key cost drivers and recommends in general where cost savings might be identified and focused.

In order to summarize some of the results found in the survey, Table 13 indicates with an X the subprocesses found by the manufacturers that are most problematic for each of the manufactured menu items. The table reflects a composite aggregation of all manufacturer's responses across all subprocesses as discussed in detail in Chapter 2. It is interesting to note that BBQ Beef. Eggs w/Ham. Apple Dessert. Frankfurters in Brine. Green Beans. Mixed Vegetables. and Peas/Mushrooms all experienced problems across all the subprocesses. Packaging and Shipping were not included as subprocesses here in Table 13 since all menu items could be improved by increased automation for these activities.

In another summary pass over the data, it is useful to examine how the manufacturers felt about which processes were the most labor intensive. Traditionally, labor intensive processes would be the most likely candidates for future automation and technological improvements. Figure 15 below represents their opinion as to the most labor intensive processes. A +3 indicates most labor intensive while a -3 indicates least labor intensive, and a 0 weight indicates no opinion.

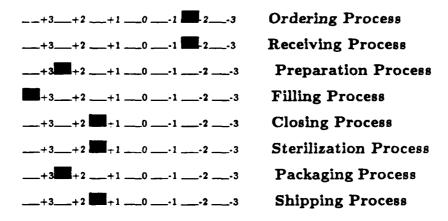


Figure 15: Labor Intensity Chart

Inspecting Figure 15 we see that the three most critical labor intensive processes are Filling, followed by Packaging and finally Preparation. Even though Packaging appears to be tied with Preparation, when the scores are aggregated, Packaging slightly edges out Preparation in being more labor intensive.

That Filling is the most labor intensive is perhaps not surprising, given its labor intensive activities as described in Chapter 2, and the state of the Filling equipment used by the various producers. The lack of adequate Filling equipment is due to the low volume requirements for Tray Packs and the specialized Filling equipment needed to handle the size and range of placement-filling problems for the menu items.

Table 13: Tray Pack Menu Item Problems

| Item | Ordering | Receiving | Preparation | Filling | Closing | Sterilization |
|-----------------------|--------------|--------------|--------------|--------------|--------------|---------------|
| BBQ Beef | X | x | x | x | x | x |
| Beef Stew | \mathbf{x} | | \mathbf{x} | \mathbf{X} | | |
| Chicken ala King | \mathbf{x} | | | | | |
| Creamed Ground Beef | X | X | \mathbf{x} | \mathbf{x} | | x |
| Eggs w/Ham | \mathbf{x} | \mathbf{x} | X | \mathbf{x} | \mathbf{x} | X |
| Apple Dessert | X | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{X} | \mathbf{x} |
| Beef Pepper Steak | \mathbf{x} | | \mathbf{x} | | | |
| Canadian Bacon | X | | | | | |
| Chicken Breasts | \mathbf{x} | | | | | |
| Frankfurters in Brine | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{x} |
| Swiss Steak | \mathbf{x} | | | | \mathbf{X} | |
| Turkey Slices w/Gravy | \mathbf{x} | | X | \mathbf{X} | \mathbf{X} | X |
| Escalloped Potatoes | \mathbf{x} | \mathbf{x} | | | | |
| Macaroni Cheese | \mathbf{x} | | | \mathbf{X} | \mathbf{X} | \mathbf{x} |
| Sweet Potatoes | X | \mathbf{x} | | | | |
| Green Beans | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{X} | \mathbf{X} | X |
| Mixed Vegetables | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{X} | \mathbf{x} | X |
| Peas/Mushrooms | \mathbf{x} | \mathbf{x} | \mathbf{x} | \mathbf{X} | \mathbf{x} | X |
| Beans w/Gravy | | \mathbf{x} | \mathbf{x} | | \mathbf{x} | |
| Meatloaf w/Gravy | | | \mathbf{x} | \mathbf{X} | | |
| Pork Slices w/Gravy | | | \mathbf{x} | \mathbf{X} | \mathbf{x} | |
| Roast Beef w/Gravy | | | X | \mathbf{x} | | |
| Roast Chicken | | | X | \mathbf{x} | | |
| Macaroni Salad | | | \mathbf{x} | | | |
| Peas and Carrots | | | | | | X |

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Packaging's importance over Preparation was slightly more favored by the respondents, although marginally, but it is quite important to future cost savings because of its generality and automation characteristics. While Preparation is a third in this itemization of labor intensive operations, it is very dependent on the type of raw material ingredients and the menu item preparation process unique to those ingredients, whereas Packaging is independent of the menu item and would be one of the most easily implementable technological changes in Tray Pack manufacturing.

To quantify the importance of Figure 15, Table 14 gives the percentage breakdown of total costs over the eight subprocesses. Table 14 illustrates again the order of importance of Filling, Packaging and Preparation as the most critical factors in Tray Pack manufacturing costs. Filling accounts for 36% of total costs while Packaging accounts

for 17% and Preparation accounts for 16.50%.

Again, the independence of the Packaging operation from the others would suggest its importance in cost savings technology for Tray Pack manufacturing. All manufacturers could aid from some form of automated packaging systems: boxing, pad insertion, labelling, palletizing, and pallet sheathing. Various equipment items for automating these operations are described in a previous report.*

B. Cost Factors

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Table 14: General Manufacturing Cost Percentages

| PROCESS | Percentage of Cost % |
|---------------|-------------------------|
| Ordering | 2.00 |
| Receiving | 3.50 |
| Preparation | 16.50 |
| Filling | 36.00 |
| Closing | 10.00 |
| Sterilization | 11.00 |
| Packaging | 17.00 |
| Shipping | 4.00 |
| Grand Total | 100.06 |

^{*} J. MacGregor Smith, Tray Pack Prototype Plant Design Technical Report NATICK/TR-87/017, June 1986. (AD A180 296)

Figure 16 aggregates the costs of the manufacturing processes into our decision tree defined earlier in Chapter 1. As is indicated in Figure 16, the percentage cost breakdown acts as a guide to future research and development expenditures for improving the Tray Pack manufacturing process.

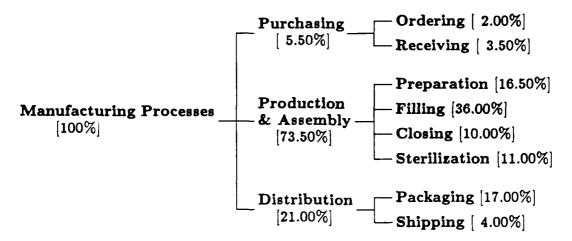


Figure 16: Process Decision Tree with Percentage Costs

C. General Recommendations for Future Developments

As another general guide to where improvements in the manufacturing process might come about to correct deficiencies in the entire Tray Pack manufacturing process, the manufacturers were asked to pinpoint those processes where improvements may come about as new advances in automation equipment or new processes of manufacturing.

Figure 17 summarizes the results from the manufacturer's opinions about where new improvements could be made for each of the various subprocesses. Within Figure 17, A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

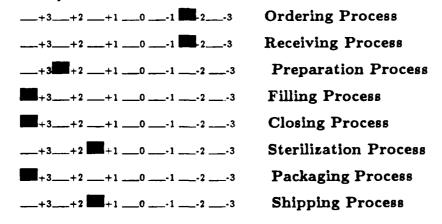


Figure 17: Possibilities for General Manufacturing Process Improvements

In interpreting Figure 17, Filling improvements are of primary importance, while Packaging and Closing share the second most important spot. New improvements in Preparation is third. The importance of new technological changes in the Filling process have been echoed throughout this report in Chapter 2 and the percentage cost breakdown embodied in Table 14 underscores its importance.

Packaging has also been shown to require some innovative ways of automating its processes since standardization already exists at this stage of the Tray Pack manufacturing process and various pieces of automated equipment are available to implement these improvements within the plants.

Improvements in the Closing process are needed because of the frequent dilemmas of the lid/can merge problem, material handling problems from closing to seaming, and maintaining seam integrity.

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Improvements in the Preparation process are also needed to smooth production and reduce labor costs in these areas. Finally, improvements that would affect the Crdering, Receiving and Shipping operations are the development of a computerized information, inventory and scheduling system operable on a personal computer (PC) for tracking and identifying raw materials and finished goods. In this way, much of the paperwork and inefficiencies and eventual costs associated with the manufacture of Tray Packs could be streamlined.

While the report has offered one predominant viewpoint and approach to a cost driver analysis, at the end of the questionnnaire, we asked the manufacturers to provide their opinion as to what additional comments and concerns may have been overlooked by our questionnaire process. Below is included one set of responses, which were felt to be quite relevant and informative:

Standardization of specifications as to raw materials preparation, and processes would reduce costs.

Also, allowing processors to use any acceptable (commercial) methods in the processing itself to yield an acceptable end item would lend flexibility.

Raw material criteria (especially spices, etc.) are overly restrictive when dealing in small amounts.

Slice size should be allowed to vary if serving size and end item are consistent.

Rapid evaluation and adoption of VECP's (i.e. Labelling or double stacking during shipment after appropriate testing) could save \$20,000,000 per year to the program.

Chapter 4. FINAL CODA

This report has pointed out, qualified, and quantified a number of the key cost components and factors that affect Tray Pack manufacturing costs.

Within Chapter 3, new equipment technologies have been pinpointed which might further realize these cost control measures. Most importantly, if the volume of Tray Packs is to increase beyond present levels and line throughput rates are to achieve the desired goal of 20 cans per minute (CPM), then many of these new technologies should be pushed forward.

This report does not attempt to be a panacea for identifying, quantifying and recommending all cost improvements possible in Tray Pack manufacturing but is simply a first step in this complex process and makes a concerted attempt to provide guidance for future efforts, research, and changes in optimizing Tray Pack manufacturing.

APPENDIX

III. General Manufacturing Questions

| | <u>(4.5)</u> | `````````````````````\\\\\\\\\\\\\\\\\ | ናንሳ ሃሳንል ዕለብ የዜተቸው ተፈጥተ ያችና ነት ነው። | X14X14X14X14X14X14X14X14X14X14X14X14X1 |
|---|---|--|---|--|
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| K | | | | |
| 5 | | APPEN | DIX | |
| 8 | III. General Manul | acturing Questions | | |
| 5075 • 555-555 • 555-6664 • 555-555 • 556-655 • 556-655 • 566-655 | This question section manufacturing. This information | requests background infor ation will be held in strict | mation on your present in | volvement with Tray Pac |
| 8 | 1. Background | | | |
| KA | Company | | I |)ate: |
| X X | Name | | | |
| | How many Tray P | acks total did you produce | this last fiscal year? | |
| | 2. Production Items | | | |
| ceece. | | ables, please check all to re produced to date. | he Tray Pack menu items | within the four functions |
| | Entrees | Entrees | Starches/Vegets | Desserts |
| <u>M!</u> ● | □ BBQ Beef □ Beef Stew | ☐ Chicken w/ Noodles ☐ Chili Con Carne | □ Potato Salad□ Sweet Creamed Corn | ☐ Apple Dessert ☐ Apple Sauce |
| | □ Breakfast Bake | Creamed Gr. Beef | Sweet Creamed Corn | ☐ Blueberry Dessert |
| . | □ Chicken ala king | □ Eggs w/Ham | | ☐ Chocolate Pudding |
| | ☐ Chicken Stew/Gravy | | | ☐ Cherry Dessert |
| | | Table of One-S | tep Menu Items | |
| 200 | Entrees | Entrees | Starches | Vegts/Desserts |
| 8 | □ BBQ Pork | ☐ Meatloaf w/Gravy | □ Beans w/Pork | ☐ Glazed Carrots |
| N. | Beef and MacaroniBeef Pepper Steak | □ Pork Sausage Links□ Pork Slices w/Gravy | ☐ Buttered Noodles | ☐ Green Beans |
| دددددد ت | ☐ Beef Tips w/Gravy | ☐ Roast Beef w/Gravy | ☐ Buttered Potatoes ☐ Escalloped Potatoes | ☐ Mixed Vegetables ☐ Peas and Carrots |
| Ç. | ☐ Beef Pot Roast | □ Roast Chicken | ☐ Macaroni Cheese | □ Peas/Mushrooms |
| * | ☐ Canadian Bacon | ☐ Spaghetti w/Meatballs | Macaroni Salad | □ Sliced Carrots |
| | ☐ Chicken Breasts | Swedish Meatballs | Spanish Rice | Whole Kernel Corn |
| | □ Chicken Cacciatore | Swiss Steak | Sweet Potatoes | ☐ Fruit Cocktail |
| | □ Franks in Brine □ Ham Slices | □ Turkey Sl.w/Gravy | □ White Rice | ☐ Sliced Peaches |
| ¥ | | ם | <u> </u> | □ Sliced Pears □ Pineapple/Syrup |
| <u> </u> | | | | |
| | | Table of Two S | tep Menu Items | |
| ತಿತ್ರಿಗಳು | Hand Placeme | ent Items | Oven Bake Items | |
| | □ Lasagne | 0 | Apple Coffee Cale | ☐ Marble Cake |
| <u>}</u> : | □ Stuffed Cabi | - | Blueberry Cake | □ Pound Cake |
| | ☐ Stuffed Pepp | pers 🗆 | Chocolate Cake | ☐ Spice Cake |

Table of Hand-Placement & Oven Bake Menu Items

3. Ordering: Process of acquiring raw materials and necessary supplies for Tray Pack manufactujing

| yes. | no | | s ordering can bottoms and lids from Central States? ny of the items below as necessary: |
|------------|---------|--|---|
| | | ☐ Inadequate Lead Tin ☐ Quality of lids/bott | · |
| yes | no | | th the securing of labels for the cans? were the most important reasons for the problem: |
| | | | uality of Items elivery Times Other |
| yes yes | no | Tray Pack production? | th the general aquisition and supply of meat items for |
| | | □ Beef □ | Hamburger □ Pork |
| | | | Chicken Turkey |
| | | □ Frankfurters □ | Sausage |
| | | If you had problems, what | were the most important reasons for the problem: |
| | | • | uality of Items elivery Times |
| yes yes | o no | Tray Pack production? | th the general aquisition and supply of dairy items for |
| | | □ Milk □ Bu | tter 🖸 Eggs |
| | | | am Cheese D Other |
| | | If you had problems, what | were the most important reasons for the problem: |
| | | | uality of Items elivery Times |
| yes yes | o no | items for Tray Pack produ | th the general squisition and supply of fresh vegetablection? any of the items below as necessary: |
| | | □ Peas □ Beans | □ Lima Beans □ Chili Beans |
| | | ☐ Mushrooms ☐ Carrot | |
| | | ☐ Tomatoes ☐ Pepper | Other |
| | | If you had problems, what | were the most important reasons for the problem: |
| | | □ Cost of Items □ C | Quality of Items |
| | | ☐ Lead Times ☐ I | Delivery Times |

| yes | no | Do you have any problems with the general acquisition and supply of Starch items. If yes, please check as many of the items below as necessary: | | | |
|-----|---------|--|---------------------------------------|---|--|
| | | ☐ Rice ☐ Potatoes ☐ Cereals/Grain | □ Flour □ Macaroni □ Noodles | □ Wheat □ Spaghetti □ Other | |
| | | If you had problems, | what were the most | important reasons for the problem: | |
| | | ☐ Cost of Items ☐ Lead Times | ☐ Quality of Items ☐ Delivery Times | Other | |
| yes | no | Do you have any problem with the supply of sauces or related items? If yes, please check as many of the items below as necessary: | | | |
| | | ☐ Tomoato sauce If you had problems, | □ Tomato Paste what were the most | Otherimportant reasons for the problem: | |
| | | ☐ Cost of Items☐ Lead Times | ☐ Quality of Items ☐ Delivery Times | □ Other | |
| yes | no | Do you have any pro If yes, please check a | | uisition of dessert items? | |
| | | □ Cherries □ Oro | anges Pineap | | |
| | | ☐ Cost of Items☐ Lead Times | ☐ Quality of Items ☐ Delivery Times | Other | |
| yes | O no | Do you have any problems with the acquisition of spices and condiments? If yes, please check as many of the items below as necessary: | | | |
| | | □ Salt □ Cornstarch □ Molasses | ☐ Pepper ☐ Garlic Powder ☐ Nuts | ☐ Brown Sugar ☐ Yeast ☐ Other | |
| | | If you had problems, what were the most important reasons for the problem: | | | |
| | | ☐ Cost of Items☐ Lead Times | ☐ Quality of Items ☐ Delivery Times | Other | |

3. Ordering Process

a) For the One Step Menu items you have produced, could you please identify the menu item and the reason why within the Ordering process, this item was so costly to Order. Please check as many of the items and reasons as apply.

If you did not produce any One Step menu items, please go on to the next question.

| ITEMS | | REASONS JOY I | rootem |
|---|---|--|---|
| □ BBQ Beef | ☐ Raw Material\$ | ☐ Material Quality | □ Other\$ |
| □ Beef Stew | ☐ Raw Material\$ | ☐ Material Quality | □ Other\$ |
| □ Breakfast Bake | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Chicken ala king | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Chicken Stew/Gravy | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Chicken w/ Noodles | Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Chili Con Carne | Raw Material\$ | ☐ Material Quality | □ Other\$ |
| □ Creamed Gr.Beef | Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Eggs w/Ham | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Potato Salad | Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Sweet Creamed Corn | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Apple Dessert | Raw Material\$ | ☐ Material Quality | Other\$ |
| □ Apple Sauce | Raw Material\$ | ☐ Material Quality | □ Other\$ |
| □ Blueberry Dessert | Raw Material\$ | ☐ Material Quality | □ Other\$ |
| | ☐ Raw Material\$ | ☐ Material Quality | Other\$ |
| ☐ Chocolate Pudding | ☐ Raw Material\$ | ☐ Material Quality | □ Other\$ |
| eason why within the Ordering | | | se identify the menu item and the |
| b) For the Two Step Menu i eason why within the Ordering tems and reasons as apply. If you did not produce any To | process, this item w | vas so costly to Order , please go on to the I | r. Please check as many of the |
| b) For the Two Step Menu i eason why within the Ordering tems and reasons as apply. | process, this item w | vas so costly to Order | r. Please check as many of the next question. Problem |
| □ Cherry Dessert b) For the Two Step Menu i eason why within the Ordering terms and reasons as apply. If you did not produce any Tilled ITEMS □ BBQ Pork | process, this item w | vas so costly to Order please go on to the i REASONS for Material Quality | r. Please check as many of the next question. Problem Other\$ |
| □ Cherry Dessert b) For the Two Step Menu is eason why within the Ordering terms and reasons as apply. If you did not produce any To ITEMS □ BBQ Pork □ Beef and Macaroni | process, this item v wo-Step menu items Raw Material\$ | REASONS for Material Quality Material Quality | r. Please check as many of the next question. Problem Other\$ |
| □ Cherry Dessert b) For the Two Step Menu is eason why within the Ordering terms and reasons as apply. If you did not produce any To ITEMS □ BBQ Pork □ Beef and Macaroni □ Beef Pepper Steak | process, this item v wo-Step menu items Raw Materials Raw Materials | REASONS for Material Quality Material Quality Material Quality | r. Please check as many of the next question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy | process, this item v wo-Step menu items Raw Materials Raw Materials Raw Materials | REASONS for Material Quality Material Quality Material Quality Material Quality Material Quality | Please check as many of the next question. Problem Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast | process, this item v wo-Step menu items Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials | REASONS for Material Quality | Please check as many of the next question. Problem Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon | process, this item v wo-Step menu items Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials | REASONS for Material Quality | Please check as many of the next question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts | process, this item v wo-Step menu items Raw Materials | REASONS for Material Quality | Please check as many of the next question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore | process, this item v wo-Step menu items Raw Materials | Please go on to the IREASONS for Material Quality | Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine | process, this item v wo-Step menu items Raw Materials | Please go on to the IREASONS for Material Quality | Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices | process, this item v wo-Step menu items Raw Materials | Please go on to the IREASONS for Material Quality | Please check as many of the next question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy | process, this item v wo-Step menu items Raw Materials | Please go on to the an REASONS for Material Quality Material Qual | Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering tems and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links | process, this item v wo-Step menu items Raw Materials | Please go on to the an REASONS for Material Quality Material Qual | Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering terms and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | process, this item v wo-Step menu items Raw Materials | REASONS for Material Quality | r. Please check as many of the next question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering terms and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy Roast Beef w/Gravy | process, this item v wo-Step menu items Raw Materials | REASONS for Material Quality | r. Please check as many of the next question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Ordering terms and reasons as apply. If you did not produce any To ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | process, this item v wo-Step menu items Raw Materials | REASONS for REASONS for Material Quality | r. Please check as many of the next question. Problem Other\$ |

| _ | Swiss Steak | Raw Materials | ☐ Material Quality | Other\$ |
|--|--|---|--|---|
| | Turkey Sl.w/Gravy | Raw Material | ☐ Material Quality | Other\$ |
| | Beans w/Pork | ☐ Raw Materials | ☐ Material Quality | □ Other\$ |
| | Buttered Noodles | ☐ Raw Materials | ☐ Material Quality | Other\$ |
| _ | Buttered Potatoes | □ Raw Materials | ☐ Material Quality | Other\$ |
| 0 | Escalloped Potatoes Macaroni Cheese | ☐ Raw Material ☐ Raw Material | ☐ Material Quality☐ Material Quality | Other\$ |
| 0 | | Raw Material | ☐ Material Quality | Others |
| | Spanish Rice | Raw Material | | □ Other\$ |
| | Sweet Potatoes | Raw Material | | Other\$ |
| 0 | White Rice | ☐ Raw Material | ☐ Material Quality | Other\$ |
| | Glazed Carrots | ☐ Raw Material! | ☐ Material Quality | □ Other\$ |
| 0 | Green Beans | ☐ Raw Material | • • | Other\$ |
| | Mixed Vegetables | Raw Material | ☐ Material Quality | Other\$ |
| _ | Peas & Carrots | ☐ Raw Material | | Other\$ |
| | Peas/Mushrooms Sliced Carrots | ☐ Raw Material: ☐ Raw Material: | | □ Other\$ |
| | Whole Kernel Corn | Raw Material: | • | Others |
| _ | ., | | , , , | |
| 0 | | ☐ Raw Material | ☐ Material Quality | Other\$ |
| | Sliced Peaches | ☐ Raw Material: | ☐ Material Quality | □ Other\$ |
| | | | | _ |
| c and t | r) For the Hand Placemen | Ordering process, th | Material Quality ave produced, could y | Others Others Ou please identify the menu item Order. Please check as many |
| c and t of th | Pineapples/Syrup For the Hand Placement the reason why within the | Raw Material at Menu items you h Ordering process, the apply. | Material Quality ave produced, could y is item was so costly t | Others ou please identify the menu item Order. Please check as many |
| and to | Pineapples/Syrup For the Hand Placement he reason why within the e items and reasons as | Raw Material at Menu items you h Ordering process, the apply. | Material Quality ave produced, could y is item was so costly t | Others rou please identify the menu item o Order. Please check as many to the next question. |
| and to | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as fryou did not produce any ITEMS | Raw Material at Menu items you h Ordering process, the apply. | Material Quality ave produced, could y is item was so costly t ou items, please go on REASONS for Pr | Others rou please identify the menu item o Order. Please check as many to the next question. |
| and to | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage | Raw Material not Menu items you he Ordering process, the apply. Hand Placement men | Material Quality ave produced, could y is item was so costly t ou items, please go on | Others rou please identify the menu item o Order. Please check as many to the next question. |
| and to | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as fryou did not produce any ITEMS Lasagne | Raw Material at Menu items you he Ordering process, the apply. Hand Placement menus | Material Quality ave produced, could y is item was so costly t ou items, please go on REASONS for Pr | Others |
| and to of the | Pineapples/Syrup For the Hand Placement he reason why within the elitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers H) For the Oven Bake Men | Raw Materials at Menu items you h Ordering process, the apply. Hand Placement men Raw Materials Raw Materials Raw Materials Raw Materials | Material Quality ave produced, could y is item was so costly t ou items, please go on REASONS for Pr Material Quality Material Quality Material Quality duced, could you plea | Others rou please identify the menu item o Order. Please check as many to the next question. oblem Others |
| and to of the state of the stat | Pineapples/Syrup The Hand Placement he reason why within the elitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers The Oven Bake Ment of the Orderin | Raw Materials of Menu items you he Ordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials us items you have process, this items. | Material Quality ave produced, could y is item was so costly t ou items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality oduced, could you please was so costly to Order | Others |
| and to of the state of the stat | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Ment why within the Orderings and reasons as apply | Raw Materials of Menu items you he Ordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials us items you have process, this items. | Material Quality ave produced, could y is item was so costly t ou items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality oduced, could you please was so costly to Order | Others |
| and to of the state of the stat | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers H) For the Oven Bake Menn why within the Orderings and reasons as apply for you did not produce any | Raw Materials of Menu items you he Ordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials us items you have process, this items. | Material Quality ave produced, could y is item was so costly to the solution of the solution o | Others |
| and to of the state of the stat | Pineapples/Syrup The Hand Placement he reason why within the elitems and reasons as for you did not produce any TEMS Lasagne Stuffed Cabbage Stuffed Peppers The Oven Bake Ment in why within the Ordering and reasons as apply for you did not produce any TEMS Apple Coffee Cake Blueberry Cake | Raw Materials of Menu items you held Ordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials Raw Materials us items you have progen process, this item | Material Quality ave produced, could y is item was so costly to the items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality Active Material Quality | Others |
| and to of the state of the stat | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Menn why within the Ordering and reasons as apply for you did not produce any ITEMS Apple Coffee Cake Blueberry Cake Chocolate Cake | Raw Materials of Menu items you he Ordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials us items you have progen process, this items. Oven Bake menu items. Raw Materials Raw Materials Raw Materials Raw Materials | Material Quality ave produced, could y is item was so costly to the items, please go on REASONS for Pr Material Quality | Others |
| and to of the reaso item | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Menn why within the Ordering and reasons as apply for you did not produce any ITEMS Apple Coffee Cake Chocolate Cake Marble Cake | Raw Materials If Menu items you hoordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials It items you have process, this items. Oven Bake menu items. Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials | Material Quality ave produced, could y is item was so costly to the items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality oduced, could you please as o costly to Order REASONS for F Material Quality | Others |
| and to of the reason item | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Menn why within the Ordering and reasons as apply for you did not produce any ITEMS Apple Coffee Cake Blueberry Cake Chocolate Cake Marble Cake Pound Cake | Raw Materials If Menu items you hordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials It items you have process, this items. Oven Bake menu items. Raw Materials | Material Quality ave produced, could y is item was so costly to the items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality oduced, could you please was so costly to Order REASONS for F Material Quality | Others |
| and to of the reason item | Pineapples/Syrup For the Hand Placement he reason why within the eitems and reasons as for you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Menn why within the Ordering and reasons as apply for you did not produce any ITEMS Apple Coffee Cake Chocolate Cake Marble Cake | Raw Materials If Menu items you hoordering process, the apply. Hand Placement med Raw Materials Raw Materials Raw Materials It items you have process, this items. Oven Bake menu items. Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials Raw Materials | Material Quality ave produced, could y is item was so costly to the items, please go on REASONS for Pr Material Quality Material Quality Material Quality Material Quality oduced, could you please as o costly to Order REASONS for F Material Quality | Others |
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| e) In the following table, please | estimate as accurately as | possible the percentage | e costs of your |
|-----------------------------------|------------------------------|----------------------------|-----------------|
| Ordering sub-process based or | n the following cost categor | ries (If a cost item is no | t appropriate, |
| please leave it blank): | | | |

| Raw Material \$ | Direct\$ (Food Items/Cans) | % |
|------------------|--|----------|
| | Indirect\$ (Wastage/Spoilage) | × |
| Labor \$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Training/Overtime) | % |
| Equipment \$ | Direct\$ (Capital Expenditures) | % |
| | Indirect\$ (Operational/Repairs) | % |
| Space \$ | Direct\$ (Cubic footage) | % |
| | Indirect\$ (Flexibility/Accessibility) | % |
| Energy \$ | Direct\$ (Power/Water/Cooling) | % |
| | Indirect\$ (Breakdowns/Weather). | % |
| Maintenance\$ | Direct\$ (Personnel) | % |
| & Safety\$ | Indirect\$(Accidents/Vermin) | % |
| Administrative\$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Copying/Computing) | % |
| SUMMARY\$ | GRAND TOTALS | [100%] |
| | | |

- 4. Receiving: Process of receiving raw materials from rail and truck deliveries, storing of these items, and retrieving them from the Warehouse.
- a) For the One Step Menu items you have produced, could you please identify the menu item and the reason why within the Receiving process, this item was so costly to Receive. Please check as many of the items and reasons as apply.

REASONS for Problem

If you did not produce any One Step menu items, please go on to the next question.

ITEMS

Second Description, Assessed appropriate the Second of Second Seconds and Second and Seconds and Second Second

| □ BBQ Beef | Spoilage\$ | □ Warehouse\$ | Other\$ |
|--|---|---|--|
| □ Beef Stew | ☐ Spoilage\$ | ☐ Warehouse\$ | □ Other\$ |
| □ Breakfast Bake | Spoilage\$ | □ Warehouse\$ | Other\$ |
| □ Chicken ala king | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ |
| □ Chicken Stew/Gravy | ☐ Spoilage\$ | □ Warehouse\$ | □ Other\$ |
| □ Chicken w/ Noodles | ☐ Spoilage\$ | □ Warehouse\$ | □ Other\$ |
| □ Chili Con Carne | ☐ Spoilage\$ | ☐ Warehouse\$ | □ Other\$ |
| □ Creamed Gr.Beef | ☐ Spoilage\$ | □ Warehouse\$ | □ Other\$ |
| □ Eggs w/Ham | □ Spoilage\$ | □ Warehouse\$ | Other\$ |
| □ Potato Salad | □ Spoilage\$ | □ Warehouse\$ | □ Other\$ |
| Sweet Creamed Corn | ☐ Spoilage\$ | ☐ Warehouse\$ | Other\$ |
| □ Apple Dessert | ☐ Spoilage\$ | ☐ Warehouse\$ | Other\$ |
| □ Apple Sauce | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ |
| □ Blueberry Dessert | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ |
| □ Chocolate Pudding | ☐ Spoilage\$ | ☐ Warehouse\$ | □ Other\$ |
| • | | □ Warehouse\$ | |
| Cherry Dessert b) For the Two-Step Menu item in why within the Receiving pro- is and reasons as apply. If you did not produce any Two- | cess, this item wa | as so costly to Rece | ive. Please check as many |
| b) For the Two-Step Menu item n why within the Receiving process and reasons as apply. | s you have prod | as so costly to Rece please go on to th | ease identify the menu item a |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- | s you have prod cess, this item was Step menu items. | as so costly to Rece please go on to th REASONS | ease identify the menu item a rive. Please check as many the next question. for Problem |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two-ITEMS BBQ Pork | s you have producess, this item was Step menu items. | as so costly to Rece please go on to th REASONS | ease identify the menu item a rive. Please check as many the next question. for Problem Other\$ |
| b) For the Two-Step Menu item n why within the Receiving pro- s and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni | s you have producess, this item was Step menu items. Spoilage\$ | as so costly to Rece please go on to th REASONS Warehouse\$ | ease identify the menu item as rive. Please check as many one next question. for Problem Other\$ |
| The Two-Step Menu item In why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak | s you have producess, this item was Step menu items. Spoilage\$ Spoilage\$ | as so costly to Rece Please go on to th REASONS Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many one next question. for Problem Other\$ Other\$ Other\$ |
| For the Two-Step Menu item why within the Receiving process and reasons as apply. ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy | s you have producess, this item was Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many one next question. for Problem Other\$ Other\$ Other\$ |
| For the Two-Step Menu item why within the Receiving process and reasons as apply. ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast | Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many of the next question. for Problem Others Others Others Others |
| For the Two-Step Menu item why within the Receiving process and reasons as apply. ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon | s you have producess, this item we step menu items. Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many of the next question. for Problem Others Others Others Others Others |
| For the Two-Step Menu item why within the Receiving process and reasons as apply. ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts | s you have producess, this item was step menu items. Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many or enext question. for Problem Others Others Others Others Others Others Others |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore | s you have producess, this item was step menu items. Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ | case identify the menu item as rive. Please check as many or enext question. for Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine | s you have producess, this item was step menu items. Step menu items. Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ Spoilage\$ | warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as rive. Please check as many or enext question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Receive REASONS Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ Warehouse\$ | ease identify the menu item as tive. Please check as many the next question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ | ease identify the menu item a rive. Please check as many or next question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving pro- s and reasons as apply. f you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ | ease identify the menu item as vive. Please check as many or enext question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving pro- s and reasons as apply. f you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ | ease identify the menu item as vive. Please check as many of the next question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy Roast Beef w/Gravy | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ | ease identify the menu item as inc. Please check as many ince next question. for Problem Other\$ |
| b) For the Two-Step Menu item why within the Receiving process and reasons as apply. If you did not produce any Two- ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | s you have producess, this item was step menu items. Step menu items. Spoilage\$ | As so costly to Rece Please go on to the REASONS Warehouse\$ | ease identify the menu item as vive. Please check as many of the next question. for Problem Other\$ |

| | Swiss Steak | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ | |
|--|--|--|--|--|-------------|
| | Turkey Sl.w/Gravy | □ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| _ | D/D 1 | | | - | |
| 0 | Beans w/Pork Buttered Noodles | □ Spoilage\$ □ Spoilage\$ | ☐ Warehouse\$ | □ Other\$ | |
| - | | □ Spoilage\$ | □ Warehouse\$ | Others | |
| ۵ | Escalloped Potatoes | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| | Macaroni Cheese | □ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| 0 | Macaroni Salad Spanish Rice | □ Spoilage\$ □ Spoilage\$ | □ Warehouse\$ □ Warehouse\$ | Other\$ | |
| | | □ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| 0 | White Rice | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| | Classid Coursely | D 6 11 A | 5 W . A | 51 Au | |
| 0 | Glazed Carrots Green Beans | ☐ Spoilage\$ ☐ Spoilage\$ | □ Warehouse\$ □ Warehouse\$ | □ Other\$ | |
| | Mixed Vegetables | □ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| | Peas & Carrots | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| 0 | Peas/Mushrooms | □ Spoilage\$ | □ Warehouse\$ | □ Other\$ | |
| | | □ Spoilage\$ □ Spoilage\$ | □ Warehouse\$ □ Warehouse\$ | Other\$ | |
| J | Whole Height Coll | _ Sponagev | | C Other - | |
| 0 | | □ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| 0 | | □ Spoilage\$ | □ Warehouse\$ | □ Other\$ | |
| _ | | ☐ Spoilage\$ | □ Warehouse\$ | ☐ Other\$ | |
| U | Pineapples/Syrup | ☐ Spoilage\$ | □ Warehouse\$ | Other\$ | |
| c) : the rea | Pineapples/Syrup For the Hand Placement No. son why within the Receive ems and reasons as app | ing process, this ite | | ou please identify the men | |
| c) the rea the ite | For the Hand Placement Moson why within the Receiv | fenu items you have ing process, this ite ly. | e produced, could y m was so costly to | ou please identify the men Receive. Please check as | |
| c) the reac the ite | For the Hand Placement M son why within the Receiv ems and reasons as app | fenu items you have ing process, this ite ly. | e produced, could y m was so costly to | ou please identify the men Receive. Please check as on to the next question. | |
| c) the read the ite | For the Hand Placement Meson why within the Receivers and reasons as approposed any House ITEMS | fenu items you have ing process, this ite ily. and Placement men | e produced, could yen was so costly to nu items, please go o | ou please identify the men Receive. Please check as on to the next question. Problem | s many |
| c) the read the ite | For the Hand Placement Meson why within the Receivems and reasons as approper you did not produce any Heson was approper and the second | fenu items you have ing process, this ite ly. | e produced, could y m was so costly to nu items, please go | ou please identify the men Receive. Please check as on to the next question. | many |
| c) the rem the ite // | For the Hand Placement Meson why within the Receivers and reasons as approposed and House and Ho | fenu items you have ing process, this itedly. and Placement men | e produced, could y in was so costly to nu items, please go REASONS for | ou please identify the men Receive. Please check as on to the next question. Problem | many |
| c) the real the ite | For the Hand Placement Meson why within the Receivers and reasons as applyou did not produce any Hostian ITEMS Lasagne Stuffed Cabbage Stuffed Peppers | fenu items you have ing process, this items ly. and Placement men Spoilage\$ Spoilage\$ | e produced, could y em was so costly to eu items, please go REASONS for Warehouse\$ Warehouse\$ | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ Other\$ | s many |
| c) the reac the ite If y | For the Hand Placement Meson why within the Receivers and reasons as approposed and Hall TEMS Lasagne Stuffed Cabbage Stuffed Peppers For the Oven Bake Menu | fenu items you have ing process, this items you have some of the second | e produced, could y in was so costly to nu items. please go o REASONS for Warehouse\$ Warehouse\$ | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ Other\$ Other\$ | em and |
| c) the reac the ite If y d) reason | For the Hand Placement Meson why within the Receivers and reasons as applyou did not produce any Hostian ITEMS Lasagne Stuffed Cabbage Stuffed Peppers | fenu items you have ing process, this items you have some of the second | e produced, could y in was so costly to nu items. please go o REASONS for Warehouse\$ Warehouse\$ | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ Other\$ Other\$ | em and |
| c) the reas the ite // / / d) reason items | For the Hand Placement Meson why within the Receivers and reasons as applyou did not produce any Hostitanian ITEMS Lasagne Stuffed Cabbage Stuffed Peppers For the Oven Bake Menu why within the Receiving | fenu items you have ing process, this items you have process, this item was a second or second o | e produced, could yen was so costly to su items. please go of REASONS for Warehouses Warehouses Warehouses Warehouses | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ Other\$ Other\$ Receive. Please check as many contributes. | em and |
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| c) the reas the ite // / d) reason items | For the Hand Placement Meson why within the Receivers and reasons as apply you did not produce any House ITEMS Lasagne Stuffed Cabbage Stuffed Peppers For the Oven Bake Menu why within the Receiving and reasons as apply. you did not produce any Output ITEMS Apple Coffee Cake Blueberry Cake Chocolate Cake | fenu items you have ing process, this items of the spoilages of the spoila | e produced, could yem was so costly to su items, please go of REASONS for Warehouses Warehouses Oduced, could you powas so costly to Recoms, please go on to REASONS for REASONS for | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ | em and |
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| c) the reas the ite If j d) reason items | For the Hand Placement Meson why within the Receivers and reasons as apply you did not produce any House ITEMS Lasagne Stuffed Cabbage Stuffed Peppers For the Oven Bake Menu why within the Receiving and reasons as apply. you did not produce any Outlier Apple Coffee Cake Blueberry Cake Chocolate Cake Marble Cake | fenu items you have ing process, this items you have process, this item were Bake menu item were Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages | e produced, could yem was so costly to REASONS for Warehouses Warehouses Warehouses Oduced, could you powas so costly to Recome, please go on to REASONS for REASONS for Warehouses Warehouses Warehouses Warehouses Warehouses Warehouses | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ | em and |
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| c) the reas the ite // / d) reason items // / | For the Hand Placement Meson why within the Receivers and reasons as apply you did not produce any House ITEMS Lasagne Stuffed Cabbage Stuffed Peppers For the Oven Bake Menu why within the Receiving and reasons as apply. You did not produce any Outlier Apple Coffee Cake Blueberry Cake Chocolate Cake Marble Cake Pound Cake | fenu items you have ing process, this items you have process, this item were Bake menu item were Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages Spoilages | e produced, could yen was so costly to REASONS for Warehouses Warehouses Warehouses Oduced, could you powas so costly to Recome. REASONS for Warehouses Warehouses Warehouses Warehouses Warehouses Warehouses Warehouses Warehouses Warehouses | ou please identify the men Receive. Please check as on to the next question. Problem Other\$ Other\$ cive. Please check as me the next question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ | em and |

| e) In the following table, please estimate as accurately as possible the percentage costs of | of your |
|--|---------|
| Receiving sub-process based on the following cost categories (If a cost item is not appro | priate, |
| please leave it blank): | |

| Raw Material \$ | Direct\$ (Food Items/Cans) | % |
|------------------|--|----------|
| | Indirect\$ (Wastage/Spoilage) | % |
| Labor \$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Training/Overtime) | % |
| Equipment \$ | Direct\$ (Capital Expenditures) | % |
| | Indirect\$ (Operational/Repairs) | % |
| Space \$ | Direct\$ (Cubic footage) | % |
| | Indirect\$ (Flexibility/Accessibility) | % |
| Energy \$ | Direct\$ (Power/Water/Cooling) | % |
| | Indirect\$ (Breakdowns/Weather). | % |
| Maintenance\$ | Direct\$ (Personnel) | % |
| & Safety\$ | Indirect\$(Accidents/Vermin) | % |
| Administrative\$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Copying/Computing) | % |
| SUMMARY\$ | GRAND TOTALS | [100%] |

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f) Below is a series of activities concerning the detailed operations within the Receiving sub-process. Could you please weight the importance of investing in new technologies (equipment and processes) to assist the overall Receiving sub-process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10123 | Reducing Delivery delays |
|------------|---|
| +3+2+10123 | Improved Information System on Deliveries |
| +3+2+10123 | Unpacking/Identifying items and Storing them |
| +3+2+10123 | Improving Quality of Raw Materials |
| +3+2+10123 | Increasing utilization of Dry Goods storage space |
| +3+2+10123 | Increasing utilization of Freezer space |
| +3+2+10123 | Increasing utilization of Refrigeration space |
| +3+2+10123 | Other |

- 5. Preparation: Process of preparing the raw materials for the specific menu item
- a) For the One Step Menu items you have produced, could you please identify the menu item and the reason why within the Preparation process, this item was so costly to Prepare. Please check as many of the items and reasons as apply.

If you did not produce any One Step menu items, please go on to the next question.

| ITEMS | | REASONS f | or Problem |
|---|--------------------|----------------------|------------|
| □ BBQ Beef | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Beef Stew | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Breakfast Bake | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Chicken ala king | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| ☐ Chicken Stew/Gravy | □ Labor\$ | ☐ Equipment\$ | □ Other\$ |
| ☐ Chicken w/ Noodles | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Chili Con Carne | □ Labor\$ | □ Equipment\$ | □ Other\$ |
| ☐ Creamed Gr.Beef | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Eggs w/Ham | □ Labor\$ | □ Equipment\$ | Other\$ |
| □ Potato Salad | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| ☐ Sweet Creamed Corn | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Apple Dessert | □ Labor\$ | □ Equipment\$ | Other\$ |
| □ Apple Sauce | □ Labor\$ | □ Equipment\$ | Other\$ |
| ☐ Blueberry Dessert | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| Chocolate Pudding | □ Labor\$ | □ Equipment\$ | Other\$ |
| □ Cherry Dessert | □ Labor\$ | □ Equipment\$ | Other\$ |
| b) For the Two Step Menu item reason why within the Preparation p the items and reasons as apply. If you did not produce any Two ITEMS | process, this iter | n was so costly to a | |
| □ BBQ Pork | □ Labor\$ | □ Equipment\$ | □ Other\$ |
| □ Beef and Macaroni | ☐ Labor\$ | □ Equipment\$ | □ Other\$ |
| □ Beef Pepper Steak | □ Labor\$ | ☐ Equipment\$ | ☐ Other\$ |
| ☐ Beef Tips w/Gravy | □ Labor\$ | ☐ Equipment\$ | □ Other\$ |
| □ Beef Pot Roast | ☐ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Canadian Bacon | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Chicken Breasts | □ Labor\$ | ☐ Equipment\$ | □ Other\$ |
| □ Chicken Cacciat ce | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Franks in Brine | □ Labor\$ | ☐ Equipment\$ | Other\$ |

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☐ Labor\$

□ Labor\$

□ Ham Slices

☐ Meatloaf w/Gravy

☐ Pork Sausage Links

Roast Chicken

☐ Swedish Meatballs

□ Swiss Steak

□ Pork Slices w/Gravy

Roast Beef w/Gravy

□ Spaghetti w/Meatballs

| □ Turkey Sl.w/Gravy | □ Labor\$ | □ Equipment\$ | Other\$ | |
|---|---|--|--|-----------|
| □ Beans w/Pork | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| Buttered Noodles Buttered Potatoes | □ Labor\$ | □ Equipment\$ | □ Other\$ | |
| □ Buttered Potatoes □ Escalloped Potatoes | □ Labor\$ □ Labor\$ | □ Equipment\$ □ Equipment\$ | Other\$ | |
| ☐ Macaroni Cheese | □ Labor\$ | ☐ Equipment\$ | Others | |
| □ Macaroni Salad | □ Labor\$ | □ Equipment\$ | □ Other\$ | |
| Spanish Rice | ☐ Labor\$ | ☐ Equipment\$ | Other\$ | |
| ☐ Sweet Potatoes | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| □ White Rice | □ Labor\$ | □ Equipment\$ | Other\$ | |
| ☐ Glazed Carrots | □ Labor\$ | ☐ Equipment\$ | C Other\$ | |
| Green Beans | □ Labor\$ | ☐ Equipment\$ | □ Other\$ | |
| ☐ Mixed Vegetables | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| Peas & Carrots | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| □ Peas/Mushrooms | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| Sliced CarrotsWhole Kernel Corn | ☐ Labor\$ ☐ Labor\$ | ☐ Equipment\$ ☐ Equipment\$ | Other\$ | |
| O Autole Weither Solu | _ Labora | eannainba 🗆 | U Others | |
| ☐ Fruit Cocktail | ☐ Labor\$ | ☐ Equipment\$ | ☐ Other\$ | |
| □ Sliced Peaches | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| Sliced PearsPineapples/Syrup | ☐ Labor\$ | ☐ Equipment\$ | Other\$ | |
| and the reason why within the P | reparation proce | | d you please identify the menu it costly to Prepare. Please check | |
| | Menu items you reparation proce as apply. | have produced, coulss, this item was so | d you please identify the menu it costly to Prepare. Please check | |
| and the reason why within the P many of the items and reason | Menu items you reparation proce as apply. | have produced, coulss, this item was so | d you please identify the menu it costly to Prepare. Please check on to the next question. | |
| and the reason why within the P many of the items and reason If you did not produce any Ho | Menu items you reparation proce as apply. | have produced, coul ss, this item was so enu items, please go | d you please identify the menu it costly to Prepare. Please check on to the next question. | |
| and the reason why within the P many of the items and reason If you did not produce any Ho ITEMS | Menu items you reparation proce is as apply. and Placement me | have produced, could so, this item was so and items, please go | d you please identify the menu it costly to Prepare. Please check on to the next question. r Problem | |
| and the reason why within the P many of the items and reason If you did not produce any Ho ITEMS Lasagne | Menu items you reparation proce is as apply. Ind Placement me | have produced, could so, this item was so enu items. please go REASONS fo | d you please identify the menu it costly to Prepare. Please check on to the next question. r Problem | |
| and the reason why within the P many of the items and reason If you did not produce any Ho ITEMS Lasagne Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menu | Menu items you reparation process as apply. Ind Placement me Labors Labors Labors titems you have por process, this it | have produced, could so, this item was so enu items. please go REASONS fo Equipments Equipments Equipments roduced, could you | d you please identify the menu it costly to Prepare. Please check on to the next question. r Problem Other\$ | as |
| and the reason why within the P many of the items and reason If you did not produce any Ho ITEMS Lasagne Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menu reason why within the Preparation | Menu items you reparation process as apply. Ind Placement me Labors Labors Labors Labors tems you have por process, this it | have produced, could so, this item was so enu items. please go REASONS fo Equipment\$ Equipment\$ Equipment\$ roduced, could you gem was so costly to | d you please identify the menu it costly to Prepare. Please check on to the next question. r Problem Other\$ | as |
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| and the reason why within the P many of the items and reason If you did not produce any Ho ITEMS Lasagne Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menu reason why within the Preparation the items and reasons as app If you did not produce any Oven ITEMS Apple Coffee Cake Blueberry Cake | Menu items you reparation process as apply. Ind Placement me Labors Labors Labors tems you have por process, this it oly. | have produced, couls, this item was so enu items. please go REASONS fo Equipments Equipments Equipments roduced, could you perm was so costly to ems. please go on to | d you please identify the menu it costly to Prepare. Please check on to the next question. r Problem Other\$ | as |
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| e) In the following table, | please estimate as | accurately as | possible the | percentage c | osts of your |
|----------------------------|--------------------|-----------------|----------------|----------------|--------------|
| Preparation sub-process | based on the follo | wing cost categ | ories (If a co | st item is not | appropriate, |
| please leave it blank): | | | | | |

| Raw Material \$ | Direct\$ (Food Items/Cans) | % |
|-----------------------------|--|--------------|
| | Indirect\$ (Wastage/Spoilage) | % |
| Labor \$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Training/Overtime) | % |
| Equipment \$ | Direct\$ (Capital Expenditures) | % |
| | Indirect\$ (Operational/Repairs) | % |
| Space \$ | Direct\$ (Cubic footage) | % |
| | Indirect\$ (Flexibility/Accessibility) | % |
| Energy \$ | Direct\$ (Power/Water/Cooling) | % |
| | Indirect\$ (Breakdowns/Weather). | % |
| Maintenance\$ & Safety\$ | Direct\$ (Personnel) | % |
| a Salety | Indirect\$(Accidents/Vermin) | % |
| Administrative\$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Copying/Computing) | % |
| SUMMARY\$ | GRAND TOTALS | [100%] |

f) Below is a series of activities concerning the detailed operations within the Preparation subprocess. Could you please weight the importance of improvements in manufacturing technologies (equipment and processes) for the Preparation process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10·1·2·3 | Improved Trimming and Dicing operations |
|---------------|--|
| +3+2+10123 | Improved Quality Inspection of Raw Materials |
| +3+2+10123 | Better utilization of Refrigeration storage |
| +3+2+10123 | Better utilization of Freezer areas |
| +3+2+10·1·2·3 | Flexible Preparation Equipment |
| +3+2+10123 | Flexible Cooking Space |
| +3+2+10123 | Adequate washing and sink areas |
| +3+2+10123 | Other |

- 6. Filling: Process of filling the cans with the menu item, inspecting the can contents, weighing the contents, and transferring the can to the closing operation
- a) For the One Step Menu items you have produced, could you please identify the menu item and the reason why within the Filling process, this item was so costly to Fill. Please check as many of the items and reasons as apply.

REASONS for Problem

If you did not produce any One Step menu items, please go on to the next question.

ITEMS

assign property is seen that the seeds of th

| □ BBQ Beef | □ Labor\$ | □ Equipment\$ | Other\$ |
|--|---|--|--|
| □ Beef Stew | □ Labor\$ | D Equipment\$ | Other\$ |
| 🗆 Breakfast Bake | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Chicken ala king | □ Labor\$ | □ Equipment\$ | Other\$ |
| ☐ Chicken Stew/Gravy | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Chicken w/ Noodles | □ Labor\$ | □ Equipment\$ | Other\$ |
| □ Chili Con Carne | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Creamed Gr.Beef | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Eggs w/Ham | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Potato Salad | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| Sweet Creamed Corn | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| □ Apple Dessert | □ Labor\$ | □ Equipment\$ | □ Other\$ |
| □ Apple Sauce | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| Blueberry Dessert | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| Chocolate Pudding | □ Labor\$ | ☐ Equipment\$ | Other\$ |
| = | | | |
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| Cherry Dessert For the Two Step Menu items why within the Filling process, easons as apply. you did not produce any Two SITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy | you have pro this item was tep menu item. Labors Labors | duced, could you poso costly to Fill. Post please go on to the REASONS Description Equipments Description Equipments Description Equipments | lease identify the menu item lease check as many of the he next question. for Problem Other\$ Other\$ |
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| r | Swedish Meatballs | □ Labor\$ | □ Equipment\$ | □ Other\$ | |
|--|--|--|---|--|--------------------------|
| | Swiss Steak | □ Labor\$ | □ Equipment\$ | Ciher\$ | |
| | ☐ Turkey Sl.w/Gravy | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| _ | | | | | |
| _ | □ Beans w/Pork □ Buttered Noodles | ☐ Labor\$ ☐ Labor\$ | ☐ Equipment\$ ☐ Equipment\$ | □ Other\$ | |
| _ | D Buttered Potatoes | □ Labor\$ | □ Equipment\$ | Other\$ | |
| | □ Escalloped Potatoes | □ Labor\$ | ☐ Equipment\$ | □ Other\$ | |
| C | □ Macaroni Cheese | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| C | □ Macaroni Salad | ☐ Labor\$ | ☐ Equipment\$ | ☐ Other\$ | |
| | □ Spanish Rice | □ Labor\$ | □ Equipment\$ | Other\$ | |
| | Sweet Potatoes | ☐ Labor\$ | ☐ Equipment\$ | Other\$ | |
| C | □ White Rice | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
| 1 | □ Glazed Carrots | □ Labor\$ | □ Equipment\$ | Other\$ | |
| | Green Beans | □ Labor\$ | □ Equipment\$ | Other\$ | |
| | □ Mixed Vegetables | □ Labor\$ | ☐ Equipment\$ | □ Other\$ | |
| [| □ Peas & Carrots | □ Labor\$ | □ Equipment\$ | Other\$ | |
| 1 | □ Peas/Mushrooms | □ Labor\$ | ☐ Equipment\$ | ☐ Other\$ | |
| _ | □ Sliced Carrots | □ Labor\$ | ☐ Equipment\$ | Other\$ | |
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| | | | - Dquipmente | | |
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| | □ Sliced Peaches □ Sliced Pears | | - · | | |
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| c) and the it fi dereason and the second s | □ Sliced Pears □ Pineapples/Syrup) For the Hand Placement Me reason why within the Filters and reasons as applet you did not produce any Ha ITEMS □ Lasagne □ Stuffed Cabbage □ Stuffed Peppers ii) For the Oven Bake Menu in why within the Filling produce any Overland Hand Hand Hand Hand Hand Hand Hand H | Labors Labors Labors Labors Labors Menu items you reling process, this y. Ind Placement me Labors | Equipment\$ Equipment\$ Equipment\$ Equipment\$ Equipment\$ Example as a costly Equipment\$ | Other\$ Other\$ Other\$ d you please identify the to Fill. Please check is on to the next question. Problem Other\$ Other\$ Other\$ Dease identify the menu in Please check as many of the next question. Or Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ | menu as mar tem an |

| e) In the following table, please estimate as accurately as possible the percentage costs of you |
|--|
| Filling sub-process based on the following cost categories (If a cost item is not appropriate, pleas |
| leave it blank): |

| Raw Material \$ | Direct\$ (Food Items/Cans) | | % |
|------------------|--|--------|---|
| | Indirect\$ (Wastage/Spoilage) | | % |
| Labor \$ | Direct\$ (Personnel) | | % |
| | Indirect\$ (Training/Overtime) | | % |
| Equipment \$ | Direct\$ (Capital Expenditures) | | % |
| | Indirect\$ (Operational/Repairs) | | % |
| Space \$ | Direct\$ (Cubic footage) | | % |
| | Indirect\$ (Flexibility/Accessibility) | | % |
| Energy \$ | Direct\$ (Power/Water/Cooling) | | % |
| | Indirect\$ (Breakdowns/Weather). | | % |
| Maintenance\$ | Direct\$ (Personnel) | | % |
| & Safety\$ | Indirect\$(Accidents/Vermin) | | % |
| Administrative\$ | Direct\$ (Personnel) | | % |
| | Indirect\$ (Copying/Computing) | | % |
| SUMMARY\$ | GRAND TOTALS | [100% |] |
| | | | |

f) Below is a series of activities concerning the detailed operations within the Filling sub-process. Could you please weight the importance of improvements in manufacturing technologies (equipment and processes) for the Filling process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10123 | Automated Can and Lid Stacking |
|------------|--|
| +3+2+10123 | Automated Can Washing |
| +3+2+10123 | Automated Placement of Large Menu items |
| +3+2+10123 | Automated Piston & Liquid Filling operations |
| +3+2+10123 | Automated Check-weigh reject operations |
| +3+2+10123 | Automated Can transfer between stations |
| +3+2+10123 | Other |

- 7. Closing: Process of joining the bottoms, lids and contents of each can, transferring the can to the seamer, closing the can, washing the can and collecting the cans into a unit load
- a) For the One Step Menu items you have produced, could you please identify the menu item and the reason why within the Closing process, this item was so costly to Close. Please check as many of the items and reasons as apply.

REASONS for Problem

If you did not produce any One Step menu items, please go on to the next question.

ITEMS

| □ BBQ Beef | □ Lid/Can Merge \$ | Closing Equipt\$ | Others |
|--|---|--|--|
| □ Beef Stew | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| □ Breakfast Bake | ☐ Lid/Can Merge \$ | □ Closing Equipt\$ | Other\$ |
| Chicken ala king | □ Lid/Can Merge \$ | Closing Equipt\$ | □ Other\$ |
| Chicken Stew/Gravy | □ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| Chicken w/ Noodles | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| □ Chili Con Carne | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| □ Creamed Gr.Beef | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| □ Eggs w/Ham | □ Lid/Can Merge \$ | □ Closing Equipt\$ · | Other\$ |
| □ Potato Salad | ☐ Lid/Can Merge \$ | □ Closing Equipt\$ | □ Other\$ |
| □ Sweet Creamed Corn | □ Lid/Can Merge \$ | ☐ Closing Equipt\$ | Other\$ |
| □ Apple Dessert | □ Lid/Can Merge \$ | ☐ Closing Equipt\$ | □ Other\$ |
| □ Apple Sauce | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | □ Other\$ |
| ☐ Blueberry Dessert | ☐ Lid/Can Merge \$ | Closing Equipt\$ | Other\$ |
| Chocolate Pudding | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | □ Other\$ |
| | ☐ Lid/Can Merge \$ | ☐ Closing Equipt\$ | □ Other\$ |
| b) For the Two-Step Menu i | | | e identify the menu item and the Please check as many of the |
| b) For the Two-Step Menu i eason why within the Closing pitems and reasons as apply. If you did not produce any Telegraphy. | rocess, this item was | so costly to Close. please go on to the n | Please check as many of the ext question. |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. | rocess, this item was | so costly to Close. | Please check as many of the ext question. |
| b) For the Two-Step Menu i eason why within the Closing pitems and reasons as apply. If you did not produce any Telegraphy. | rocess, this item was | so costly to Close. please go on to the m REASONS for A | Please check as many of the ext question. Problem Others |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any Telephone ENTREES BBQ Pork Beef and Macaroni | rocess, this item was | so costly to Close. please go on to the management of the managem | Please check as many of the ext question. Problem Others |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any Telephone ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak | rocess, this item was wo-Step menu items. Lid/Can Merge \$ | please go on to the m REASONS for A Closing Equipt\$ Closing Equipt\$ | Please check as many of the ext question. Problem Others |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any Telestrates BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy | rocess, this item was wo-Step menu items. Lid/Can Merge \$ Lid/Can Merge \$ | please go on to the market REASONS for a Closing Equipt\$ Closing Equipt\$ Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ Other\$ Other\$ Other\$ |
| b) For the Two-Step Menu is eason why within the Closing paterns and reasons as apply. If you did not produce any Telestrates BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast | Lid/Can Merge \$ | please go on to the marked REASONS for a Closing Equipt\$ Closing Equipt\$ Closing Equipt\$ Closing Equipt\$ Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two-Step Menu is eason why within the Closing paterns and reasons as apply. If you did not produce any Telesters BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon | Lid/Can Merge \$ | please go on to the m REASONS for a Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any Telescope BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts | Lid/Can Merge \$ | please go on to the m REASONS for a Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore | Lid/Can Merge \$ | please go on to the m REASONS for Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing paterns and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine | Lid/Can Merge \$ | please go on to the m REASONS for Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing paterns and reasons as apply. If you did not produce any Telescons BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices | Lid/Can Merge \$ | please go on to the m REASONS for Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any Telescons and Macaroni Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy | Lid/Can Merge \$ | please go on to the m REASONS for Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing pitems and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links | Lid/Can Merge \$ | please go on to the m REASONS for Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing process and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | Lid/Can Merge \$ | please go on to the m REASONS for a Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing process and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy Roast Beef w/Gravy | Lid/Can Merge \$ | please go on to the m REASONS for A Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |
| b) For the Two-Step Menu is eason why within the Closing process and reasons as apply. If you did not produce any To ENTREES BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links Pork Slices w/Gravy | Lid/Can Merge \$ | please go on to the m REASONS for a Closing Equipt\$ | Please check as many of the ext question. Problem Other\$ |

| | Swedish Meatballs | U | Lid/Can | Merge | \$ 0 | Closing Equipt | | Other\$ |
|--|--|---|--|---|---|--|----------------------------|--|
| | Swiss Steak | | Lid/Can | Merge | \$ □ | Closing Equipt | • 0 | Other\$ |
| | Turkey Sl.w/Gravy | | Lid/Can | Merge | \$ 🗆 | Closing Equipt | | Other\$ |
| | • | | • | | | | | |
| | Beans w/Pork | 0 | Lid/Can | Merge | \$ D | Closing Equipt | | Other\$ |
| | Buttered Noodles | | Lid/Can | | | Closing Equipt | | Other\$ |
| | Buttered Potatoes | | Lid/Can | | | Closing Equipt | | Other\$ |
| _ | Escalloped Potatoes | | Lid/Can | | | Closing Equipt | | Other\$ |
| | Macaroni Cheese | | Lid/Can | _ | | Closing Equipt | | Other\$ |
| | Macaroni Salad | | Lid/Can | | | Closing Equipt | | Other\$ |
| | Spanish Rice | | Lid/Can | | | | | |
| | | | - | | | Closing Equipt | | Other\$ |
| | White Rice | | Lid/Can | | | Closing Equipt | | |
| | white face | ٥ | Lid/Can | Merge | • ⊔ | Closing Equipt | • 0 | Other\$ |
| | Glazed Carrots | | 1:4/0 | Mana | | Chair - Projec | | Outrad |
| _ | Green Beans | | Lid/Can | | | Closing Equipt | | Other\$ |
| | | | Lid/Can | _ | | Closing Equipt | | Other\$ |
| | Mixed Vegetables | | Lid/Can | | | Closing Equipt | | Other\$ |
| _ | Peas & Carrots | | Lid/Can | _ | | Closing Equipt | | Other\$ |
| | Peas/Mushrooms | | Lid/Can | | | Closing Equipt | | Other\$ |
| | Sliced Carrots | | Lid/Can | | | Closing Equipt | | Other\$ |
| | Whole Kernel Corn | | Lid/Can | Merge | \$ D | Closing Equipt | \$ D | Other\$ |
| _ | | | | | | | | |
| | Fruit Cocktail | | Lid/Can | _ | | Closing Equipt | | Other\$ |
| | Sliced Peaches | 0 | Lid/Can | Merge | | Closing Equipt | | Other\$ |
| | Sliced Pears | | Lid/Can | Merge | \$ □ | Closing Equipt | | Other\$ |
| | Pineapples/Syrup | | Lid/Can | Merge | \$ □ | Closing Equipt | \$ D | Other\$ |
| | | | | | | | | lease identify the menu item |
| nd t f th | | e Closin is apply | g proces | s, this | item | was so costly | to Clo | sc. Please check as many |
| nd tof th | he reason why within the items and reasons a | e Closin is apply | g proces | s, this | item u item | was so costly | to Clo | se. Please check as many e next question. |
| nd tof the | he reason why within the items and reasons a f you did not produce any | e Closin is apply | ng proces 7. Placemen | s, this | item u item RE | was so costly s, please go oi | to Clo to the | se. Please check as many e next question. |
| nd tof th | he reason why within the items and reasons a f you did not produce any | e Closin us apply Hand l | ng proces 7. Placemen | s, this | item u item RE | was so costly s, please go or ASONS for P | to Clo to the roblem | se. Please check as many e next question. |
| nd t | he reason why within the items and reasons a f you did not produce any INTREES | e Closin is apply Hand I | ng proces 7. Placemen San Merge San Merge | es, this men | item u item RE Closi | was so costly s. please go of ASONS for P ing Equipment\$ | to Clo to the roblem | se. Please check as many e next question. Other\$ |
| easo tem | he reason why within the items and reasons as you did not produce any ENTREES Lasagne Stuffed Cabbage Stuffed Peppers h) For the Oven Bake Me | e Closin as apply Hand I Lid/C Lid/C Lid/C can item ag proces | ng proces y. Placemen an Merge an Merge an Merge s you ha s, this i | es, this at men es [es | u item RE Closi Closi Closi duced | was so costly s. please go of ASONS for P ing Equipment\$ ing Equipment\$ ing Equipment\$ could you pleasestly to Close | to Clo | oc. Please check as many e next question. Other\$ Other\$ entify the menu item and the ase check as many of the |
| E C | he reason why within the items and reasons a found for produce any interest in the stuffed Cabbage of Stuffed Cabbage of Stuffed Peppers in the Oven Bake Men why within the Closing and reasons as applead | e Closin as apply Hand I Lid/C Lid/C Lid/C can item ag proces | ng proces y. Placemen an Merge an Merge an Merge s you ha s, this i | es, this at men es [es | u item RE Closi Closi duced as so | was so costly s. please go of ASONS for P ing Equipment\$ ing Equipment\$ ing Equipment\$ could you pleasestly to Close | to Clo | others Others entify the menu item and the ase check as many of the question. |
| nd the first the | he reason why within the items and reasons a f you did not produce any interest Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Men why within the Closing and reasons as appled you did not produce any interest. | e Closin as apply Hand I Lid/C Lid/C Lid/C nu item as proces y. Oven I | ag proces y. Placemen San Merge San Merge San Merge s you ha s, this i | s, this at men s | u item RE Closi Closi Closi duced as so c | was so costly s. please go of ASONS for P ing Equipment\$ ing Equipment\$ ing Equipment\$ could you please go on to the EASONS for P | to Clo | others |
| nd the first state of the first | he reason why within the items and reasons as found for produce any interest. Lasagne Stuffed Cabbage Stuffed Peppers I) For the Oven Bake Men why within the Closing and reasons as apple found for produce any interest. Lasagne TEMS Apple Coffee Cake | e Closin as apply Hand I Lid/C Lid/C Lid/C nu item ag proces y. Oven I | ag proces The pro | s, this at men s | u item RE Closi Closi duced as so c | was so costly s. please go of ASONS for P ing Equipment\$ ing Equipment\$ ing Equipment\$ could you pleasely to Close ase go on to the EASONS for the sing Equipment | to Clo | othersoth |
| nd the fifth fither fit | he reason why within the items and reasons as found for produce any interest in the control of t | e Closin as apply Hand I Lid/C Lid/C Lid/C Lid/C nu item g proces y. Oven I | ag proces Can Merge Can Merge San Werge San Herge San Herge San Herge San Herge Can Mer | es, this at men es [es [es [exe pro tem w nu iten ge \$ ge \$ | citem u item RE Closi Closi duced as so c | was so costly s. please go of ASONS for P ing Equipment\$ ing Equipment\$ ing Equipment\$ could you pleasely to Close ase go on to the EASONS for the sing Equipment* | to Clo | others entify the menu item and the ase check as many of the question. |
| nd the fifth | he reason why within the items and reasons as a you did not produce any interest and seasons as a polytopic and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply any interest and reasons as apply interest. | e Closin as apply Hand I Lid/C Lid/C Lid/C unu item g proces y. Oven I Lid/ Lid/ Lid/ | ag proces Can Merge Can Merge Syou has, this i Bake men Can Mer Can Mer | es, this at men s | closiduced as so cons. plea | was so costly s. please go of ASONS for P ing Equipments ing Equipments ing Equipments could you pleasely to Close ase go on to the EASONS for a sing Equipments ing Equipments ing Equipments | to Clo | others check as many chers Others entify the menu item and the ase check as many of the question. |
| and the fifth of t | he reason why within the items and reasons as a you did not produce any interest and seasons as apple to the Oven Bake Men why within the Closin and reasons as apple in you did not produce any interest and reasons as apple in you did not produce any interest and reasons as apple in you did not produce any interest and reasons as apple in you did not produce any interest and reasons as apple in you did not produce any interest and reasons as apple in you did not produce any interest and interest | e Closin as apply Hand I Lid/C Lid/C Lid/C Lid/C nu item g proces y. Oven I Lid, Lid, Lid, Lid, Lid, | ag proces To lacement Can Merge San Merge San Merge San Merge San Merge San Merge Can Mer Can Mer Can Mer Can Mer | es, this at men es [es [es] es | Litem RE Closi | was so costly s. please go of ASONS for P ing Equipments ing Equipments ing Equipments could you pleasely to Close ase go on to the EASONS for the sing Equipments sing Equipments sing Equipments sing Equipments sing Equipments | to Clo | others check as many chers others entify the menu item and the ase check as many of the question. Others Others Others Others Others Others |
| and the fifth of t | he reason why within the items and reasons as a you did not produce any interest and seasons as a polytopic and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply you did not produce any interest and reasons as apply any interest and reasons as apply interest. | e Closin as apply Hand I Lid/C Lid/C Lid/C Lid/C nu item g proces y Oven I Lid, Lid, Lid, Lid, Lid, | ag proces Can Merge Can Merge Syou has, this i Bake men Can Mer Can Mer | s, this it men s | u item RE Closi Closi Closi Closi Closi Closi Closi Closi Clo | was so costly s. please go of ASONS for P ing Equipments ing Equipments ing Equipments could you pleasely to Close ase go on to the EASONS for a sing Equipments ing Equipments ing Equipments | to Clo | others check as many chers Others entify the menu item and the ase check as many of the question. |

property of the property of th

| e) In the | following ta | ble, please | estimate as | accurately as | possible th | e percentage co | sts of your |
|------------|--------------|-------------|--------------|-----------------|---------------|--------------------|--------------|
| Closing | sub-process | based on t | he following | cost categories | (If a cost it | em is not appropri | iate, please |
| leave it b | olank): | | | | | | |

| | \$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | FERENCE FOR FOR FOR | A CONTRACTOR OF THE PROPERTY O | والمعافل مستوسيق منافسيق معافسيق مستقسيق مستقسيق |
|--|--|--------------------------------------|--|--|
| प्रकट्टरक्टर | e) In the following table, | , please estimate c | s accurately as possible t | he percentage costs of y |
| · · | | | | tem is not appropriate, ple |
| 565.0555 | Labor \$ | Direct\$ (Perso | nnel) | % |
| | | Indirect\$ (Train | ning/Overtime) | % |
| | Equipment \$ | Direct\$ (Capita | al Expenditures) | % |
| recelera poposopi, visioner possioner | • • | · | rational/Repairs) | % |
| | S | • | • • • | |
| E | Space \$ | · | footage) | % |
| Ş | | Indirect\$ (Flex | ibility/Accessibility) | % |
| 8 | Energy \$ | Direct\$ (Powe | r/Water/Cooling) | % |
| Ž. | | Indirect\$ (Brea | akdowns/Weather). | % |
| • | Maintenance\$ | Direct\$ (Perso | onnel) | % |
| | & Safety\$ | Indirect\$(Accid | dents/Vermin) | % |
| | Administrative\$ | Direct\$ (Perso | onnel) | % |
| 2 | | Indirect\$ /Cop | ying/Computing) | |
| Ş | SUMMARY\$ | • | OTALS | [100%] |
| ×. | | | | į J |
| وجعز مجهومية كالمعاومة والمعاومة وال | Could you please weight | the importance of | the operation to the overs | thin the Closing sub-procull manufacturing costs for (set importance, and a 0 wei |
| <u>.</u> | +3+10 | 13 | Automated Lid/Tray M | lerge |
| e K | +3+2+10 | 123 | | r between closure to seame |
| C . | +3+2+10 | | Faster Seaming process | • |
| C. | +3+2+10 | | Automated Quality/Ch Automated Can washin | |
| | +3+2+10 | | Automated Stacking of | |
| Ç | +3+2+10 +3+2+10 | | Other | Constitute a direction |
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| oveyevese. | <u> ĸāĸāŧātātātoāssāsātātātātātātātā</u> | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | | |

| +3+2+10123 | Automated Lid/Tray Merge |
|------------|--|
| +3+2+10123 | Automated Can transfer between closure to seamer |
| +3+2+10123 | Faster Seaming process (reliability/repair) |
| +3+2+10123 | Automated Quality/Check of Seam |
| +3+2+10123 | Automated Can washing at outfeed of seamer |
| +3+2+10123 | Automated Stacking of cans into a unit load |
| +3+2+10123 | Other |

- 8. Sterilization: Process of loading the unit load into the Steflizer(s), cooking the cans, controlling the process, unloading the cans and transferring them to the Packaging area.
- a) For the One-Step Menu items you have produced, could you please identify the menu item and the reason why within the Sterilization process, this item was so costly to Sterilize. Please check as many of the items and reasons as apply.

If you did not produce any One-Step menu items, please go on to the next question.

| ITEMS | | REASONS for P | roblem |
|--|--|---|---|
| □ BBQ Beef | ☐ Sterilizer Control\$ | □ Load/Unload\$ | D Other\$ |
| □ Beef Stew | ☐ Sterilizer Control\$ | □ Load/Unload\$ | □ Other\$ |
| □ Breakfast Bake | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Chicken ala king | ☐ Sterilizer Control\$ | □ Load/Unload\$ | □ Other\$ |
| ☐ Chicken Stew/Gravy | ☐ Sterilizer Control\$ | ☐ Load/Unload\$ | □ Other\$ |
| □ Chicken w/ Noodles | ☐ Sterilizer Control\$ | □ Load/Unload\$ | ① Other\$ |
| □ Chili Con Carne | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Creamed Gr.Beef | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Eggs w/Ham | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Potato Salad | ☐ Sterilizer Control\$ | □ Load/Unload\$ | □ Other\$ |
| □ Sweet Creamed Corn | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Apple Dessert | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| □ Apple Sauce | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| ☐ Blueberry Dessert | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| ☐ Chocolate Pudding | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| 5 Ol D | ☐ Sterilizer Control\$ | □ Load/Unload\$ | Other\$ |
| eason why within the Sterilization | on process, this item w | ed, could you pleas as so costly to Ster | e identify the menu item and the |
| b) For the Two Step Menu i | on process, this item wily. | as so costly to Ster | ilize. Please check as many of ext question. |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as apput for the did not produce any Telegram Telegram is the step of the ste | on process, this item w oly. wo Step menu items, pl | as so costly to Ster lease go on to the n REASONS for A | ilize. Please check as many of ext question. Problem |
| b) For the Two Step Menu is eason why within the Sterilization he items and reasons as appulf you did not produce any Tolerans BBQ Pork | on process, this item woly. wo Step menu items, pl | as so costly to Ster lease go on to the n REASONS for 1 Load/Unload \$ | ext question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization he items and reasons as appur styou did not produce any Tourist ITEMS BBQ Pork Beef and Macaroni | on process, this item woly. wo Step menu items. pl Sterilizer Control Sterilizer Control | ease go on to the n REASONS for a Load/Unload \$ Load/Unload\$ | ext question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization he items and reasons as appul f you did not produce any Tourist ITEMS BBQ Pork Beef and Macaroni Beef Pepper Steak | on process, this item wolly. wo Step menu items. pl Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control | ease go on to the n REASONS for a Load/Unload \$ Load/Unload \$ Load/Unload \$ | ext question. Problem Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as appured for the items and reasons as appured for the items. BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy | on process, this item wolly. wo Step menu items. pl Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control | ease go on to the n REASONS for A Load/Unload \$ Load/Unload\$ Load/Unload\$ Load/Unload\$ | ext question. Problem Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization terms and reasons as apput for you did not produce any Tolerans BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast | on process, this item wolly. wo Step menu items. pl Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control | ease go on to the n REASONS for A Load/Unload \$ | ext question. Problem Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization terms and reasons as appur structure of the items and reasons are structure of the items of the | on process, this item wolly. wo Step menu items. pl Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control Sterilizer Control | as so costly to Ster lease go on to the m REASONS for I Load/Unload \$ | cilize. Please check as many of ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as apput you did not produce any Tolerans BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts | on process, this item worly. wo Step menu items. pl Sterilizer Control | as so costly to Ster Tease go on to the m REASONS for I Load/Unload \$ | cilize. Please check as many of ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as apput you did not produce any Tolerans BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore | on process, this item wolly. wo Step menu items. pl Sterilizer Control | as so costly to Ster REASONS for A Load/Unload \$ | Other\$ O |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as apput you did not produce any Tolerans BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine | on process, this item wolly. wo Step menu items. pl Sterilizer Control | as so costly to Ster REASONS for A Load/Unload \$ Load/Unload\$ | cilize. Please check as many of ext question. Problem Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ Other\$ |
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| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as appured for the items and reasons are items. BBQ Pork BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy | on process, this item wolly. wo Step menu items. pl Sterilizer Control | as so costly to Ster REASONS for A Load/Unload \$ Load/Unload\$ | ext question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as appured for the items and reasons. BBQ Pork BBQ Pork Beef and Macaroni Beef Pepper Steak Beef Tips w/Gravy Beef Pot Roast Canadian Bacon Chicken Breasts Chicken Cacciatore Franks in Brine Ham Slices Meatloaf w/Gravy Pork Sausage Links | on process, this item wolly. wo Step menu items. pl Sterilizer Control\$ | as so costly to Ster REASONS for A Load/Unload \$ | ext question. Problem Other\$ |
| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as appured for the items and reasons are appured for the items and items are appured for the items and items are appured for the items and items are appured for the items are appured for | on process, this item wolly. wo Step menu items. pl Sterilizer Control\$ | as so costly to Ster lease go on to the n REASONS for a Load/Unload \$ | ext question. Problem Other\$ |
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| b) For the Two Step Menu is eason why within the Sterilization the items and reasons as appured for the items and reasons are supported for the items and items are supported for the items are support | on process, this item wolly. wo Step menu items. pl Sterilizer Control\$ | as so costly to Ster lease go on to the n REASONS for A Load/Unload \$ Load/Unload \$ | ext question. Problem Other\$ |

| | Swiss Steak | Sterilizer Contro | ol\$ Load/Unload\$ | □ Other\$ | |
|---------|--|--|--|---|--------|
| | Turkey Sl.w/Gravy | ☐ Sterilizer Contro | ol\$ Load/Unload\$ | Other\$ | |
| | | | | | |
| | Beans w/Pork | ☐ Sterilizer Contro | ' | Other\$ | |
| | · - | ☐ Sterilizer Contro | • | Other\$ | |
| | Buttered Potatoes | ☐ Sterilizer Contro | , | □ Other\$ | |
| | Escalloped Potatoes | ☐ Sterilizer Contro | , | Other\$ | |
| | Macaroni Cheese | ☐ Sterilizer Contro | · · · · · · · · · · · · · · · · · · · | Other\$ | |
| | Macaroni Salad | ☐ Sterilizer Contro | , | □ Other\$ | |
| | Spanish Rice | ☐ Sterilizer Contro | • | Other\$ | |
| | | ☐ Sterilizer Contro | | Other\$ | |
| | White Rice | ☐ Sterilizer Contro | ol\$ Dead/Unload\$ | Other\$ | |
| | Glazed Carrots | ☐ Sterilizer Contr | ol\$ Load/Unload\$ | □ Other\$ | |
| _ | Green Beans | ☐ Sterilizer Contr | • | Other\$ | |
| | Mixed Vegetables | ☐ Sterilizer Contr | | □ Other\$ | |
| | Peas & Carrots | ☐ Sterilizer Contr | · · · · · · · · · · · · · · · · · · · | Other\$ | |
| | Peas/Mushrooms | ☐ Sterilizer Contr | , | Other\$ | |
| | Sliced Carrots | ☐ Sterilizer Contr | ' | □ Other\$ | |
| | Whole Kernel Corn | ☐ Sterilizer Contr | • | D Other\$ | |
| _ | | | | | |
| | Fruit Cocktail | ☐ Sterilizer Contr | ol\$ Load/Unload\$ | □ Other\$ | |
| \Box | Sliced Peaches | ☐ Sterilizer Contr | ol\$ Load/Unload\$ | Other\$ | |
| | | | | Other\$ | |
| | Sliced Pears | Sterilizer Contr | ol\$ Load/Unload\$ | | |
| | Sliced Pears Pineapples/Syrup c) For the Hand Placemen | □ Sterilizer Contr at Menu items you h | ol\$ Doad/Unload\$ ave produced, could y | Other\$ou please identify the menu item | ח |
| nd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placemen | Sterilizer Control of Menu items you h Sterilization process ons as apply. | ave produced, could y, this item was so cost | ou please identify the menu itently to Sterilize. Please check as | ח |
| nd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the sy of the items and reas | Sterilizer Control of Menu items you h Sterilization process ons as apply. | ave produced, could y, this item was so cost | Others ou please identify the menu itently to Sterilize. Please check at to the next question. | n |
| nd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the sy of the items and reas If you did not produce any | Sterilizer Control of Menu items you h Sterilization process ons as apply. | ave produced, could y, this item was so cost | Others ou please identify the menu itently to Sterilize. Please check at to the next question. | n |
| nd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the my of the items and reason who will not produce any of the items. | □ Sterilizer Contract Menu items you h Sterilization process sons as apply. Hand Placement men | ave produced, could y, this item was so cost nu items, please go on a | Other\$ ou please identify the menu item tly to Sterilize. Please check and to the next question. | n |
| nd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the yof the items and reaself you did not produce any sufficient that the second secon | ☐ Sterilizer Controls If Menu items you h Sterilization process Sons as apply. Hand Placement men ☐ Sterilizer Controls | ave produced, could y this item was so cost the items. please go on the REASONS for Pro | Other\$ | n |
| ond nam | Sliced Pears Pineapples/Syrup c) For the Hand Placemen the reason why within the ty of the items and reas If you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Men | □ Sterilizer Controls It Menu items you h Sterilization process Sons as apply. Hand Placement men □ Sterilizer Controls □ Sterilizer Controls □ Sterilizer Controls u items you have prestion process, this itemply. | ave produced, could y , this item was so cost nu items. please go on a REASONS for Pro Load/Unload\$ Load/Unload\$ Load/Unload\$ Load/Unload\$ oduced, could you plea m was so costly to Ste | Other\$ | n 8 |
| nnd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the yof the items and reaself you did not produce any sufficient the Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menon why within the Sterilizations and reasons as a sitems and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and reasons as a significant statement of the Sterilizations and statement state | □ Sterilizer Controls It Menu items you h Sterilization process Sons as apply. Hand Placement men □ Sterilizer Controls □ Sterilizer Controls □ Sterilizer Controls u items you have prestion process, this itemply. | ave produced, could y , this item was so cost nu items. please go on a REASONS for Pro Load/Unload\$ Load/Unload\$ Load/Unload\$ Load/Unload\$ oduced, could you plea m was so costly to Ste | Other\$ | n 8 |
| nnd nan | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the yof the items and reaself you did not produce any ITEMS Lasagne Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menon why within the Sterilizativems and reasons as any If you did not produce any ITEMS | □ Sterilizer Controls It Menu items you h Sterilization process Sons as apply. Hand Placement men □ Sterilizer Controls □ Sterilizer Controls □ Sterilizer Controls u items you have prestion process, this itemply. | ave produced, could yo, this item was so cost nu items, please go on a REASONS for Produced, Could Unloads Doad/Unloads Doad/Unloads oduced, could you please m was so costly to Stems, please go on to the REASONS for Produced REASONS for Pro | Other\$ | n 8 |
| ond nam | Sliced Pears Pineapples/Syrup c) For the Hand Placementhe reason why within the lay of the items and rease of you did not produce any last statement of the Cabbage Stuffed Cabbage Stuffed Peppers d) For the Oven Bake Menton why within the Sterilizations and reasons as a layou did not produce any statement of the Cabbage of the Cabbage of the County of the Cabbage of the Cabbage of the County of the Coun | Sterilizer Controls tu items you have prestion process, this itemply. Oven Bake menu items | ave produced, could you items, please go on a Load/Unloads Load/Unloads Load/Unloads Load/Unloads Load/Unloads Load/Unloads Soduced, could you please m was so costly to Stems, please go on to the REASONS for Produced Loading/Unloadings | Others Ou please identify the menu item tly to Sterilize. Please check as to the next question. Others Others Others se identify the menu item and the rilize. Please check as many of mext question. | e e of |
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| e) In the following table, please estimate as accurately as possible the percentage costs of yo | 11 |
|--|----|
| Sterilization sub-process based on the following cost categories (If a cost item is not appropriat | e, |
| please leave it blank) | |

| Labor \$ | Direct\$ (Personnel) | % |
|------------------|--|----------|
| | Indirect\$ (Training/Overtime) | % |
| Equipment \$ | Direct\$ (Capital Expenditures) | % |
| | Indirect\$ (Operational/Repairs) | |
| Space \$ | Direct\$ (Cubic footage) | % |
| | Indirect\$ (Flexibility/Accessibility) | % |
| Energy \$ | Direct\$ (Power/Water/Cooling) | % |
| | Indirect\$ (Breakdowns/Weather). | % |
| Maintenance\$ | Direct\$ (Personnel) | % |
| & Safety\$ | Indirect\$(Accidents/Vermin) | % |
| Administrative\$ | Direct\$ (Personnel) | % |
| | Indirect\$ (Copying/Computing) | % |
| SUMMARY | GRAND TOTALS | [100%] |

f) Below is a series of activities concerning the detailed operations within the Sterilization subprocess. Could you please weight the importance of the operation to the overall manufacturing costs for this sub-process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10123 | Automated Transfer of unit load into sterilizer |
|------------|---|
| +3+2+10123 | Controling Sterilizer for menu items . |
| +3+2+10123 | Automated Unloading & Transfer to Packaging |
| +3+2+10123 | Other |

9. Packaging

a) In the following table, please estimate as accurately as possible the percentage costs of your Packaging sub-process based on the following cost categories. (If a cost item is not appropriate, please leave it blank)

| Raw Material \$ | Direct\$ (Packaging/Boxing Items) | | .% |
|------------------|--|-------------|-----------|
| | Indirect\$ (Wastage/Spoilage) | | -% |
| Labor \$ | Direct\$ (Personnel) | | .% |
| | Indirect\$ (Training/Overtime) | | -% |
| Equipment \$ | Direct\$ (Capital Expenditures) | | -% |
| | Indirect\$ (Operational/Repairs) | | -% |
| Space \$ | Direct\$ (Cubic footage) | | -% |
| | Indirect\$ (Flexibility/Accessibility) | | -% |
| Energy \$ | Direct\$ (Power/Water/Cooling) | | _% |
| | Indirect\$ (Breakdowns/Weather). | | _% |
| Maintenance\$ | Direct\$ (Personnel) | | _% |
| & Safety\$ | Indirect\$(Accidents/Vermin) | | _% |
| Administrative\$ | Direct\$ (Personnel) | | _% |
| | Indirect\$ (Copying/Computing) | | -% |
| SUMMARY\$ | GRAND TOTALS | [100% |] |

b) Below is a series of activities concerning the detailed operations within the Packaging subprocess. Could you please weight the importance of improvements in manufacturing technologies (equipment and processes) to the Packaging process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10123 | Carton forming |
|---------------|--|
| +3+2+10123 | Pad insertion |
| +3+2+10123 | Boxing of cans |
| +3+2+10·1·2·3 | Checking Quality of Packaging |
| +3+2+10123 | Labelling of shipping cartons |
| +3+2+10123 | Palletizing of shipping cartons into a unit load |
| +3+2+10123 | Sheathing of unit load |
| +3+2+10123 | Other: |

| 10. | Shipping: | Identifying | and sta | oring unit | loads | , selecting | trays | for | incubation |
|-----|------------|----------------------------|------------|------------|-------|-------------|-------|-----|------------|
| | shipping u | ldentifying Init loads, | collecting | damaged | bno t | refurned of | ans. | | |

| a) In the following table, please | estimate as accurately as possible the percentage costs of your |
|-----------------------------------|--|
| Shipping sub-procese based on | the following cost categories. (If a cost item is not appropriate, |
| please leave it blank) | • |

| onnel)% |
|--------------------------|
| ining/Overtime) % |
| tal Expenditures)% |
| erational/Repairs)% |
| c footage)% |
| xibility/Accessibility)% |
| er/Water/Cooling) |
| eakdowns/Weather)% |
| onnel)% |
| idents/Vermin) |
| onnel)% |
| pying/Computing)% |
| OTALS [100%] |
| |

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b) Below is a series of activities concerning the detailed operations within the Shipping sub-process. Could you please weight the importance of improvements in manufacturing technologies (equipment and processes) to the Shipping process. A +3 indicates most important while a -3 indicates least importance, and a 0 weight indicates no opinion.

| +3+2+10123 | Automated Shipping warehouse storage |
|------------|---|
| +3+2+10123 | Automating order picking of stored cans |
| +3+2+10123 | Automated material handling/transfer |
| +3+2+10123 | Other |

11. Summary

Below is a series of questions concerning the overall Sub-Processes. Could you please weight each Sub-Process as to which is the most labor intensive in your Tray Pack manufacturing process. A +3 indicates most labor intensive while a -3 indicates least labor intensive, and a 0 weight indicates no opinion.

Given your previous answers to the questions among the eight sub-process categories for your general Tray Pack manufacturing operations, how would you allocate percentage (%) manufacturing costs among the eight sub-processes:

| Ordering Process | % |
|-----------------------|------|
| Receiving Process | % |
| Preparation Process | % |
| Filling Process | % |
| Closing Process | % |
| Sterilization Process | % |
| Packaging Process | % |
| Shipping Process | % |
| Grand Totals | 100% |

Could you please weight each Sub-Process as to which needs the most improvement in manufacturing efficiency so as to correct deficiencies to the entire Tray Pack manufacturing process. These improvements may come about as new advances in automation equipment or new processes of manufacturing. A +3 indicates most improvement needed while a -3 indicates least improvement needed, and a 0 weight indicates no opinion.

| +3+2+10123 | Ordering Process |
|------------|-----------------------|
| +3+2+10123 | Receiving Process |
| +3+2+10123 | Preparation Process |
| +3+2+10123 | Filling Process |
| +3+2+10123 | Closing Process |
| +3+2+10123 | Sterilization Process |
| +3+2+10123 | Packaging Process |
| +3+2+10123 | Shipping Process |

VIII General Opinions

| might be b have not be | etter controlled | if you feel we ha y the previous se | ve overlooked o | opinion as to he comitted some is tions in the ques | sues and probl | ems the |
|---------------------------|------------------|--|-----------------|---|---------------------------------------|-------------|
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THANK YOU FOR YOUR PARTICIPATION IN THIS QUESTIONNAIRE

| Distribution List |
|--|
| |
| Defense Technical Information Center |
| Cameron Stn BG5 |
| Alezandria, VA 22314 |
| Commander |
| Attn: DPMSO (Mr. O'Brien) |
| Cameron Station |
| Alezandria, VA 22304-8100 |
| Merton Singer, Colonel (Ret.) |
| Ezecutive Secretary R&DA for Military Food Packaging Systems, Inc. |
| 103 Biltmore Drive, Suite 106 |
| San Antonio, TX 78213 |
| Central States Can Co |
| Attn: Mr. Dave Blizzard, Vice President, Engineering + RSD 700 16th Street, S.E. |
| Massillon, OH 44648 |
| Sterling Bakery, Inc |
| Attn: Mr. Dexter Bellis, Tray Pack Production Manager |
| 5722 Kenwick San Antonio, TX 78238 |
| |
| Vantage Foods, Inc |
| 10311 Evendale Drive |
| Cincinnati, OH 45241 |
| Southern Packaging and Storage Company, Inc |
| Attn: Mr. Alan Dafter, Vice President, Research and Development |
| Bennettsville, SC 29512 |
| Venice Maid Co., Inc |
| Attn: Mr. Charles Lagrosso 270 North Mill Road |
| P.O. Boz 1505 |
| Vineland, NJ 08360 |
| Vance Foods Company |
| Attn: Mr. Ron Van Ekeren, Vice President 5415 Mc Dermott Drive |
| Berkeley, IL 60163 |
| Bryan Bros |
| Attn: Mr. Richard Lanke, Plant Production Manager |
| P.O. Box 1177 West Point MS \$0779 |
| West Point, MS 39773 |
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| Algis Away rooms Corp | | | • | | • | • | | • | • | • | • | • | | | | • | ٠ | | | | | | 1 |
|--|----------------|-----|-----|-----|---|----|-----|---|---|---|---|---|---|---|-----|---|---|---|---|---|---|----|---|
| Attn: Mr. James Bourg, Presidence P.O. Boz 184 | dent | | | | | | | | | | | | | | | | | | | | | | |
| Edinburg, TX 78540 | | | | | | | | | | | | | | | | | | | | | | | |
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